The Builder.

No. CCCCLXXXIX.

SATURDAY, JUNE 19, 1852.

THERE is an evident anxiety amongst brickmakers to produce bricks of improved form and better character than those that have been long in use, and even the reproaches that we addressed to them some time ago have not been without their use. At present, however, little has been done: the removal of the fiscal hindrances has not yet produced the good results we looked for: bricks of the worst character are still used, and in respect of decoration the attempts are but feeble and have not yet been taken up by the public. Still there is a stir arising: brick machines of various sorts are patented, and bricks of different construction advertised.

We scarcely anticipate that bricks will be made more cheaply by machines than by hand, but we may have them better for the same cost. Those of both sorts ought to be cheaper than they are. We have an account before us of a "patent brick" manufactory conducted by Mr. Beart, at Huntingdon, not far from Cambridge. These bricks are perforated: each has twenty-four round holes through it. Steam grinds the clay and forces it into the machine: a small metal screen prevents stones from getting into the mill. The bricks are wheeled to the drying-stoves where they are kept twenty-four hours to dry, and are then built up in a kiln at the farther end of the stoves, to be burnt in the ordinary way. These have been proved, our informant says, by Ransome and May, of Ipswich, to be "stronger than solid bricks." This, of course, does not mean that the perforations give a stronger form of brick, but they admit of better burning, and allow the moisture to escape without producing fissures. "The cost at which bricks can be produced in the factory is, for labour, including raising the clay, 4s. to 5s. per thousand, to which the price of half a ton of fuel for working steam-engine, drying-stoves, &c. is to be added."

Hart's portable brick-machine includes a truck running on a tramway, to convey the clay to the machine; a pug-mill, in which the clay is tempered; and an endless chain, conveying moveable moulds passing under the pug-mill. The operation of the machine is as follows:—The clay is dug from the field, watered down in the usual manner, and placed by the temperers in the truck, when the machine is set in motion by two horses or steam power. The truck moves along the tramway up an incline plane, and when it reaches the hopper the latch is lifted up, and the bottom of the truck opens and discharges the clay into the hopper: the clay is then ground and passed down into moveable moulds, and is carried under the mill by an endless chain to the end of the machine, where the bricks are received by two persons, who open the moulds and place them on pallet-boards on the pages: they then place the moulds on a slide, which carries them to the other end of the machine, when they are again placed by two persons on the endless chain to be again filled. In this way, they say, 2,000 bricks may be made with ease every hour, and a greater quantity, if required.

The same power which makes the bricks grinds the clay. The machine runs upon two wheels, and may be moved with two horses at pleasure. The cost of making 20,000 per day of ten hours, at London prices, according to the patentee, is, by hand-labour, four gangs, 3*l.* 16*s.* and by machine, 1*l.* 9*s.*

In this calculation, however, he allows nothing for the cost of the machine (200*l.*), wear and tear, cost of steam power, &c. so that the statement is not quite fair.

From Louisville, United States, we hear of a machine, invented by an Englishman, not yet in operation, which is to manufacture bricks *ready for use* in thirty-six hours "at a cost of at least 50 per cent. less than the usual mode of manufacturing them."

Woodworth and Mower, of Boston, also in the United States, have a machine for making bricks from dry clay, which turns out 3,000 per hour. The clay is pulverised, and the machine worked by a steam-engine of 20-horse power. The clay is first dried, then ground between heavy rollers, then screened or sifted and passed into the machine in a uniform state, where it is subjected to the immense power of the machine, and a beautiful brick is said to be produced, almost as smooth and dense as polished marble. The bricks are taken from the machine and immediately set in the kiln ready for burning, without spreading previously on the yard to dry. The denseness and polish spoken of must interfere with the adherence of the mortar.

The machine patented by Messrs. Randell and Saunders, of Bath, has been already described in our pages. It consists of a horizontal reservoir for the clay, on a strong iron frame, in which revolve two shafts geared together by spur wheels. One of the shafts is prolonged outside the frame, on which is a spur-wheel connected with a pinion on the same shaft as a fast and loose pulley, through which the power is applied. Each of the shafts in the receiver carries a clay traversing screw, the threads of which are formed very deep and hollow, and in their revolutions not only force the clay which is continuously fed from a hopper forward, but pug it as it proceeds, until it is forced out in a continuous stream at the mouth-piece, which may be of the form of the common brick or tile, or by the introduction of a core they may be made hollow, or pipes of any form or calibre may be produced. On leaving the orifice of the mould they are received on an endless band passing over rollers, which is set in motion by the friction of the clay, and on the end roller is a cone pulley with grooves of various diameters, from which a crossed endless cord actuates a self-acting cutting apparatus, which, by shifting the cord on the cone, can be made to cut off the material in lengths from 3 inches to 3 feet.

Amongst those who are entering largely into the manufacture of bricks is Mr. Thos. Cubitt, who has opened extensive grounds on the Medway, set up steam-engines with lofty furnace-shaft, and is otherwise preparing for large operations in machine-made bricks. The arrangement he has in use at Thames-bank is that known as the Ainslie machine, with some improvements. One of these, attended by three boys, turns out 1,000 bricks per hour, a limit fixed, not by the machine, but by the ability of the attendants to remove those made. The clay passes through two rollers out of the pug-mill, by which means the air is driven out,—a very important point to be considered in examining the operations of any brick-machine. Oil runs in behind the die, to facilitate the passage of the clay through it, and this assists in giving a smooth face and ends to the brick, while the wire which cuts each off leaves a rough top and bottom for the mortar. It is scarcely necessary to remark that all clays will not suit brick-machines. There is a nice adaptation of the Ainslie machine for making large earthen pipes, with a "collar" at the end of each, by one operation.

Mr. Moon's "hollow chimney bricks" are slowly making their way into use; but it takes a long time to obtain an extended adoption of any new arrangement. The way in which smoke flues are formed in the large majority of houses now built is most unworkmanlike and barbarous, full of evil, and in some cases, danger: the bricks, or more usually bats, are put together without the least care, and the interior is coarsely plastered over with mortar or with pargetting, which is very speedily destroyed by the apparatus used for sweeping chimneys, and then the smoke finds it way out through the open joints to the destruction of the paint, paper, furniture, and comfort of the occupant on either side, if nothing worse ensue. The flues formed by the chimney bricks are 10 inches in diameter, and the thickness between each brick 9 inches. This, in some positions, might be an objection.

The bricks for "British bond," registered by Mr. W. Austin, are made to dovetail: the headers have the form, on plan, of two wedge-shaped pieces, joined together at the narrow ends. They are a simplification merely of Hitch's "Rebated bricks." Like the latter, they admit of continuous spaces in the wall for pipes, ventilation, &c.

The coloured and glazed bricks now manufactured offer materials for adaptation; and Minton's examples of ornament in baked earth, exhibited at Marlborough House, should show architects that there is an unworked field open to them for the display of artistic talent and ingenuity.

REASONS FOR THE COMPLETION OF THE NATIONAL MONUMENT OF SCOTLAND.*

THE site, on the summit of the Acropolis, must have greatly enhanced the beauty of the Parthenon. All structures depend much on situation for effect, more especially the Grecian Doric Temple, from its unity and simplicity of composition. The Greeks generally chose elevated and commanding sites, not unfrequently rural, and far removed from the bustle of cities; in illustration of which, besides the Temples of the Acropolis, the following examples, among many others, may be enumerated: the Temple of Minerva, on the promontory of Sunium; of Jupiter, on Mount Panhellenius, in Egina; of Apollo, on Mount Cotylus, amidst the forests of Arcadia; the temples on the rocky heights of Delphi and Eleusis; the Temple of Esculapius, near Ligurio, situated in a grove surrounded by mountains; the Doric temple on the precipitous rocks of Segesta; the Temple of Venus, on Mount Eryx; besides those of Juno, Lucina, Concord, Hercules, and Jupiter Olympius, on the lofty ridge of Agrigentum.

* The following formed part of a paper read before the Architectural Institute of Scotland. The paper gave also a sketch of the circumstances attending the commencement of the monument, and remarks on the ancient and modern state of the Temple of Minerva, or Parthenon.

The Calton Hill, bearing so striking a resemblance to the Acropolis of Athens, would be admirably suited to the display of the majestic beauties of a restoration of the Parthenon. Inexhaustible quarries of the most beautiful and durable freestone in the vicinity offer materials for its construction equal in appearance to the finest marble. The architects and operative masons of Edinburgh are inferior to none in Great Britain, and have already proved themselves capable of executing the most delicate and difficult members of Grecian architecture. In erecting a great national structure, it is of the utmost consequence to fix on some model of known and approved excellence, which will admit of being executed on its full scale, and in all its grandeur. Had a composition with a dome been adopted, it must, however handsome, have presented but a paltry and diminutive imitation of St. Peter's at Rome, St. Paul's of London, or perhaps a caricature of the Pantheon. In the Ionic and Corinthian we could never hope to equal the new Louvre of Paris, or the splendid structures of Italy, and other countries of Europe. The unapproachable beauty and delicacy of our Gothic cathedrals, waiving all considerations of their cost, would have rendered any attempts in that style utterly hopeless. In selecting the Parthenon as our model, no such risk is incurred. The chaste, majestic, and faultless beauty of the Grecian Doric temple will eclipse the most costly and magnificent works of modern times. Provided the restoration be correctly executed, and accompanied with appropriate sculpture and pictorial decorations, a certain and glorious success must be achieved, the influence of which on the future efforts of national taste and genius in the three sister arts, it is impossible fully to appreciate.

The Walhalla of Ratisbon (Regensburg), the national monument of Germany, begun about 1830, and completed and inaugurated in 1842, is a Grecian octostyle Doric temple, with seventeen columns in the flanks, in imitation of the Parthenon. The whole is constructed of a hard limestone or marble from the mountains of Salsburg. When I visited it in 1839, the external architecture was finished, and the sculpture, by Rauch and Schwanthaler, were placed on the pediments, but boarded over. The interior was only bare walls. From the description, however, by the overseer, of the intended plans, the interior, it would appear, is one great hall, with an entrance at each front, exclusively destined for the reception of statues and busts of the great men of Germany, after death. There is a gallery supported by columns over each entrance in the great hall, on which are placed caryatides supporting the ceiling. There are likewise narrow galleries on the sides, connecting with those over the entrances, with a projection in the centre of each, having two caryatides supporting the ceiling. I saw two of the caryatides nearly finished in a shed where the sculptors were at work. They were of white marble, but the overseer told me they were to be stained, and partly gilt, in imitation of the ancient statues of ivory and gold. There is to be no pictorial decoration. The building is fire-poof, without a particle of wood in its construction, the roof being of iron and bronze, and the portals of bronze, or some less costly metal, adorned with sculpture. Under the structure are extensive substructions, in which are placed the statues or busts of eminent men living, which, after death, are transferred by a species of apotheosis to the upper temple. The Walhalla is placed on the brink of a hill close to the Danube, the principal approach being by a double flight of massive stairs and terraces up the steep ascent from the river. The effect of this confused mass of white marble, as I saw it from the opposite plain of the Danube, was most unseemly, and destroyed the beauty and unity of the temple from the very point of view which would have been the most striking and interesting. The Scottish national monument was projected and begun more than eight years before the Walhalla. Whether the king of Bavaria ever heard of the intended Scottish restoration is doubtful; but whether he did or not is of little consequence. Scotland is at all events entitled to the credit of having anticipated the plans of a prince universally acknowledged to be a man of the most refined taste, in all that regards art, in Europe.

English architects, and writers on architecture, are not backward in eulogising the perfection of Grecian architecture in the abstract, but both, with few exceptions, evince the most decided aversion to its being restored in its purity and true dimensions. No sooner was it announced that the Scottish National Monument was to be in its external architecture a restoration of the Parthenon, than all these gentlemen raised a simultaneous outcry against such an attempt as preposterous and too absurd to be listened to. The Quarterly Reviewers signalised themselves as their champions in a long and elaborate article in No. LIV. An able answer was made in the *Edinburgh Review*, No. LXXV. but not quite so full as the subject demanded. The following passage from the *Quarterly Review* affords a fair specimen of their mode of reasoning:—

"When employed by its authors and inventors, the architecture of Athens is faultless. The separate members of the building have a definite relation to the whole. They are aggregated by affinity, and connected by apposition. Each one is in its proper place: no one is extraneous or superfluous: all are characterised by fitness and propriety. Grecian Architecture is a composition of columns, which are intended to assemble themselves into the form of a Grecian temple. They seek to enter into no other combination. Beauty and elegance result from their union. The long unvaried horizontal line of entablature rests in stable tranquillity upon the even ranging columns below, and the conical shafts are repeated in unbroken symmetry. The edifice is perfect in itself, therefore it admits of no change in its plan, of no addition to its elevation. It must stand in virgin magnificence, unmated and alone. The Grecian temple may be compared to a single crystal, and to the process of crystallization. Disturb the arrangement of the molecules of the crystal, and they will set into a mis-shapen fragment. Increase the number of their crystals, allow them to fix themselves upon each other, and their individual regularity will be lost in the amorphous mass. Thus in the Grecian temple the component parts have settled themselves into a shape of perfect harmony, such as is required by their integral figure; but it is a shape that cannot be varied in its outline, nor can it be changed in its proportions. Neither does it submit to be annexed to any other. Every attempt that is made to blend the temple with any other design produces a lame and discordant effect. We must reject the arch, the noblest invention of architectural science. Porticoes cannot be duplicated. Doric columns cannot be raised in stories. No windows can open to the cella. No wing can be added to the right or to the left, which does not at once convince the observer that it has no real relationship to the centre which it obscures. No adaptation can be given which will reconcile it to utility. Plate-glass windows glaring through the intercolumniation; chimneys and chimney-pots arranged above the pediment, are just as appropriate as English nouns and verbs in a Greek hexameter."

All this is a mere tissue of truisms totally inapplicable to the subject in discussion; for on the assumption that the architecture of the Scottish National Monument is externally to be a classic restoration or fac simile of the Parthenon, all their truisms and poetic imagery fall to the ground. Indeed one would naturally suppose that it was intended as a satire on their own Anglo-Greek buildings, which are characterised by the very faults, discordant combinations, and corruptions alluded to in the above passage. Grecian Architecture, according to the reviewers, is a composition of columns, which assemble themselves into the form of a Grecian temple, and seek to enter into no other combination. Were temples the only structures raised by the Greeks? Vitruvius describes various other combinations of columns,—the forum, with its numerous porticoes, colonnades, basilicæ, curiæ; the gymnasium or palæstra, with its xysta, extensive peristyles, halls, exhedræ, baths, &c.; the theatres, including their porticos and hypæthral walks. Even the Grecian temple itself assumes a great variety of form, proceeding not only from the different orders and degrees of intercolumniation, but from the several distinct species of temple, differing materially from each other in size, form, arrangement, richness of decoration, and disposition of the interior—from the simple temple in Antis, to the prostyle, amphiprostyle, peripteral, pseudoperipteral, dipteral, hypæthral, monopteral, circular—not to mention the extensive periboli which generally encircled the larger temples, embracing porticoes, galleries, statues, &c. In short, Grecian architecture included all the graceful variety of which columnar architecture was susceptible. Besides, are we to reject Grecian architecture, acknowledged by the reviewers to be so "faultless," "perfect," "beautiful," and "harmonious," because the arch cannot be introduced—porticoes cannot be duplicated—columns cannot be raised into stories—nor wings added;—in short, because we cannot succeed in vitiating and corrupting it according to our own wayward fancies? Had the reviewers been consistent, they would have regarded the steeple or tower equally incompatible with Grecian architecture as the introduction of the arch, duplication of stories, or chimneys or chimney-pots surmounting the pediments. But, so far from this, we find, in a subsequent page, the following passage:—"There is considerable difficulty in combining a steeple with the Grecian and Roman architecture. Wren mastered the difficulty, and produced combinations scarcely inferior to the Gothic." This is disturbing with a vengeance "the primitive molecules of the crystal," if not making a barbarous and unwarrantable attack on "its virgin magnificence, unmated and alone."

The reviewers maintain that "the restoration of the Parthenon will teach nothing to the architectural student which he cannot learn from the accurate drawings with which he is presented by his contemporaries." But, admitting this proposition to a certain extent, of what avail is such a knowledge if it is never to be reduced to practice, but reserved for the libraries and portfolios of amateurs and professional men? Would it not equally apply to the Gothic, Italian, and other styles?*

GEORGE CLEGHORN.

BRITISH ARCHÆOLOGICAL ASSOCIATION.

ON Wednesday, June 9th, Mr. S. R. Solly, F.S.A. V.P. in the chair, Mr. Pidgeon exhibited two ancient chess-men of jet found in the Moot Hill, Warrington, Lancashire. Mr. Baigent made a further report of his progress in the discovery of mural paintings in St. John's Church, Winchester.

Drawings of various antiquities in the museum of Mr. Bateman, of Goulgreave, were exhibited by Mr. Brushfield; also a very curious reliquary set in a silver box, said to have been found in the stone coffin containing the remains of Benedict Biscop, obiit 703, in St. Peter's Monastery, at Monkwearmouth, Durham, during some alterations in 1803. It was accompanied by an interesting letter from the present proprietor, to whom it had been given by the person who took it out of the coffin; but the workmanship of the box was thought by several members to be of as late a date as the fourteenth century. The question, therefore, arises, was it really the coffin of Benedict Biscop? If so, it must have been disturbed at some earlier period, and the reliquary at that time placed in the coffin, as it can scarcely be considered the work of the eighth century.

Mr. Rolfe exhibited two spurs, not a pair, but both of the Elizabethan period.

Mr. Burkitt read a paper on the ancient signs of houses in London, and enumerated many that still exist. The paper was full of curious and amusing matter, and very agreeably terminated the last public meeting of the session.

The chairman stated that the exact day in August for convening the congress at Newark could not be fixed until something more definitive was known respecting the dissolution and re-assembling of Parliament, and that the earliest notice would be given to the members, of the period that would be most convenient to his Grace the Duke of Newcastle. The society then adjourned to November 10th.

* To be continued.

DIAGRAMS AS TO ADMITTANCE OF LIGHT TO BUILDINGS.

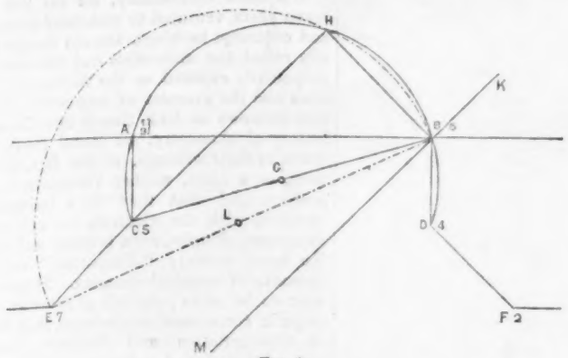

FIG. 1.

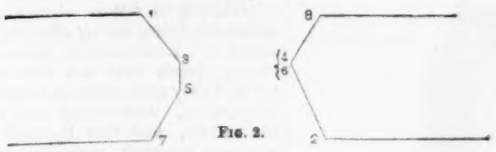

FIG. 2.

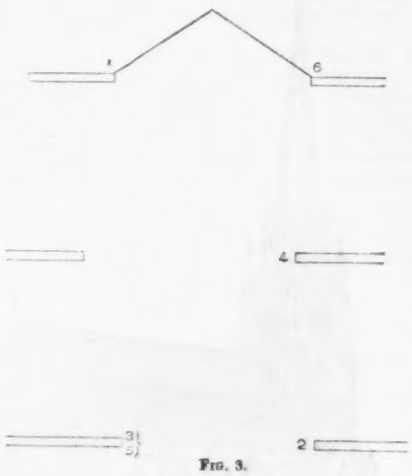

FIG. 3.

ON THE ADMISSION OF DAYLIGHT INTO BUILDINGS.*

THE following demonstrations will serve to make the subject more intelligible:—

Let ABEF (Fig. 1) be a section through a rectangular opening for light exposed to a hemisphere of sky, the section being at right angles with two of the sides of the rectangle. Let the sides AC, BD, of the opening be square with the face, and let CE, DF, be splayed off at equal angles one to the other. Let us consider first only the plane of the section. Join BC and BE, and bisect them in G and L respectively. With centre G rad. GC describe circle CHB, passing through A (because BAC is a right angle). With centre L rad, LE describe circle EHB. Produce EC cutting circle CHB in H. Join HB. Then H is a point in circle EHB also, because EHB is a right angle. Through B draw MK parallel to EH. Now BE is the line of *one* of the two extreme oblique rays which can pass through the opening (AF being the other). Also from every point in that part of the sky which is intercepted between EB and FA produced, triangles of rays will pass through the opening limited by its sides. These rays, if systematized according to their parallel directions will form parallelograms parallel to every line between BE and AF. Taking these parallelograms in order, from the line of the extreme ray BE to the line of the other extreme ray AF, their widths on BE is O; their widths then continually increase up to the perpendicular to AB, and then continually diminish till on AF they are again O.

A very approximate proportional value of these parallelograms may be obtained by taking the widths at certain small equal angular intervals as they pass from BE to AF. These small intervals will subtend equal angles so long as the centre lines of the successive parallelograms pass through the centres of the circles on which the degrees are measured, and let us take *two* degrees as the equal intervals. Take any such parallelogram HEKM—then ∵ CHB is a right angle, ∴ BH (or chord of arc BH) measures its width. So the chords of the arcs from B to BH (rad. LB), taken at two degrees intervals, measure all the parallelograms at such intervals as far as the parallel of EH. Thus far B and E have been the points which limit the widths of the parallelograms, but on passing the parallel of EH, B and C become the limiting points. At this parallel BH is the chord of both circles BHE and BHC. Also the chords from arc BH to arc BHA taken at such 2° intervals will measure all the remaining parallelograms at similar intervals, as far as the perpendicular to AB. ∴ the sum of the chords of arcs from B to arc BH (rad. LB) added to the sum of the chords from arc BH to arc BHA (rad. GB), will measure proportionally all the parallelograms passing at such intervals through the opening from BE to the said perpendicular to AB. Also the same will measure the parallelograms passing through the opening from AF to the said perpendicular to AB. ∴ twice the said sums of chords will measure all the parallelograms passing at such intervals through the opening on the plane of the said section. But the chord of an arc = 2 × sine of ½ the arc. ∴ (taking now degrees as the intervals instead of 2 degrees) 2 × sum of sines from B to ½ arc BH × rad. LB + 2 × sum of sines from ½ arc BH to ½ arc BHA × rad. GB measure the same.

But ½ arc BH rad. LB is represented by ∠ BEH (which = ½ ∠ BLH.)
And ½ arc BH rad. GB is represented by ∠ BCH (which = ½ ∠ BGH.)
And ½ arc. BHA rad. GB is represented by ∠ BCA (which = ½ ∠ BGA.)

Now, putting the diameter* BE for twice the rad. LB and the diameter* BC for twice the rad. GB, we have: BE × sum of sines from O° to ∠ BEC + BC × sum of sines from BCE (supplement of BCH) to BCA measure the same. A similar formula will apply to the section perpendicular to the other two sides of the rectangular opening, and the results of the two formulæ multiplied together will give *a number proportionate to the quantity of light passing through the opening.*

The following general theorem may be deduced in like manner. Let Fig. 2 represent a section perpendicular to two sides of a rectangular opening, the sides being irregular. Figure the two points which are in the line of one of the extreme rays 1, 2. Then considering the successive parallelograms which would pass through the opening, beginning from line 1, 2, these points 1 and 2 will at first limit the width of such parallelograms. The succession continuing, another point will, perhaps, become one of the limiting points instead of either 1 or 2. Let this point be instead of 1, and figure it 3; say the next limiting point is instead of point 2, and figure it 4; the next is (say) instead of point 3, and figure it 5; now suppose the next limiting point is instead of 5 (and therefore on the same side of the opening as 5): in this case recur to point 4, and assign it a second figure 6, then figure the limiting point instead of 5, 7; let the next be instead of point $\frac{4}{6}$ and figure it 8, and so on. The even numbers will thus be on the one side, and the odd numbers on the other side of the opening. This being done the table which follows will give the proper result:—

Diagonals.	*Sum of Sines.*	
1—2	× from 0° to ∠ 213	
2—3	× ,, ∠ 132 to ∠ 324	
3—4	× ,, ∠ 243 to 90°+90° to ∠ 435	
$\left\{\begin{matrix}4\\5\end{matrix}\right\}$—$\left\{\begin{matrix}5\\6\end{matrix}\right\}$	× ,, ∠ 354 to ∠ 657	× ½ =
6—7	× ,, ∠ 576 to ∠ 768	
7—8	× ,, ∠ 687 to 0°	
&c.		

The following are the rules for constructing the table. (1.) Put diagonals in order 1. 2, 2. 3, &c. as far as the figures on the diagram extend. (2.) If the same diagonal is represented on two lines, bracket them as $\left\{\begin{matrix}4.5\\5.6\end{matrix}\right\}$ (3.) Put (or suppose) zigzag lines from 2 to 1, 1 to 3, 3 to 2, &c. as shown. This forms the first column of *diagonals.* The second column shows the angles between which the *sums of the sines* are to be taken at successive intervals of degrees. (4.) Look to the column of diagonals and take the angles in the zigzag order, as shown 213, ∠ 132, 324, &c. The first line will be from 0° to ∠ 213, the second ∠ 132 to ∠ 324, &c.; and the last line will be from the last three figures (as above, 687) to 0°. (5.) If two obtuse angles come in the same line (as in the third line above), put down from first angle to 90° added to 90° to the second angle. (6.) The third column is the multiple ½. The use of the table is as follows:—(1.) Measure the diagonals 1. 2, 2. 3, &c. and put down the measures in order in feet and decimals. (2.) Measure the angles 213, 132, &c. and put down the number of degrees in order. (3.) Find from the table *below* the sums of sines (taking the supplements where obtuse) and note them in their place. (4.) The result is found as follows: Diag. 1. 2 × sum of sines from 0° to ∠ 213. + diag. 2. 3 × sum of sines from ∠ 132 to ∠ 324, and so on. The sum of the quotients to be multiplied into the third column (½).

So long a formula will seldom be required in practice. Where the sides of the opening are similar it will be sufficient to go only up to 90° from the line of the extreme ray. Thus, in Fig. 1, which is figured according to the rule, the formula is—

Diagonals.	*Sum of Sines.*	
$\left\{\begin{matrix}1\\2\end{matrix}\right\}$—$\left\{\begin{matrix}2\\3\end{matrix}\right\}$	× from 0° to 324	=
3—4	× ,, 243 to 435	
4—5	× ,, 354 to 546	

The third line is nil, because 354 and 546 are both right angles. The third column (½) of the formula is cancelled, because we have

* See p. 364, ante.

* These are hereafter called diagonals, as more expressive of lines passing through the angles formed by the sides of the opening.

ST. MARY CHURCH, SOUTH DEVON.

considered only the parallelograms up to the perpendicular to AB, and the result would have had therefore to be doubled.

Fig. 3 is a diagram showing the application to openings through floors, &c. as well-holes under a skylight. The figures apply to the quantity of light passing through the bottom opening $\frac{3}{5}$ 2. The formula is—

Diagonals.		*Sum Sines.*	
1 . 2	×	from 0° to 213	× ½ =
2 . 3	×	,, 132 to 324	
3 . 4 / 4 . 5	×	,, 243 to 546	
5 . 6	×	,, 465 to 0°	

Table of the Sums of Sines of Arcs taken at intervals of degrees, from 0° to 90° radius 1, to 2 decimal places:—

Deg.	Sums of Sines.	Deg.	Sums of Sines.	Deg.	Sums of Sines.	Deg.	Sums of Sines.	Deg.	Sums of Sines.
1	·02	19	3·28	37	11·84	55	24·84	73	41·02
2	·05	20	3·63	38	12·45	56	25·67	74	41·98
3	·10	21	3·98	39	13·08	57	26·51	75	42·95
4	·17	22	4·36	40	13·73	58	27·36	76	43·91
5	·26	23	4·75	41	14·38	59	28·21	77	44·89
6	·37	24	5·16	42	15·05	60	29·08	78	45·87
7	·49	25	5·58	43	15·73	61*	29·95	79	46·85
8	·63	26	6·02	44	16·43	62	30·84	80	47·84
9	·78	27	6·47	45	17·13	63	31·73	81	48·83
10	·96	28	6·94	46	17·85	64	32·63	82	49·82
11	1·15	29	7·43	47	18·59	65	33·53	83	50·81
12	1·36	30	7·93	48	19·33	66	34·45	84	51·80
13	1·58	31	8·44	49	20·08	67	35·36	85	52·80
14	1·82	32	8·97	50	20·85	68	36·30	86	53·80
15	2·08	33	9·52	51	21·63	69	37·23	87	54·80
16†	2·36	34	10·07	52	22·41	70	38·17	88	55·79
17	2·65	35	10·65	53	23·21	71	39·11	89	56·79
18	2·96	36	11·24	54	24·02	72	40·06	90	57·79

NOTE.—To find the sum of sines between any two arcs, deduct the number opposite the smaller arc from that opposite the larger arc, thus: sum of sines from 16° to 61° = 29·95*—2·36† = 27·59. It will be generally sufficient to use only *one* decimal place for the sums of sines, and *one* only for the parts of a foot in measuring the diagonals.

JOHN ABEL AND HIS TOWN-HALLS.—With reference to the notice of John Abel recently given, a correspondent reminds us that views and full particulars of his works there mentioned, are given in Mr. Clayton's "Ancient Timber Edifices," published in 1846. The town-halls of Hereford and Leominster are the most curious and perfect buildings of their kind ever erected, especially the former. The lower part is open, and there were two stories above carried on pillars and arches. In Mr. Clayton's drawings the upper story is restored. The old hall at Weobly and the school-house there, both by Abel, are also represented.

ST. MARY CHURCH, SOUTH DEVON.

THE present condition of the parish church in this village is very deplorable, and efforts are now being made to obtain a more fitting edifice.

Plans have been prepared, by Mr. W. J. Hugall, of Cheltenham: a faculty has been granted for building a new chancel, external to the present church, and rebuilding the whole of the present structure, the area of which, with a considerable addition on the south side, will be covered by the new nave and north and south aisles, and the two chancel aisles. Annexed we give an engraving of the design, and we take from *The Churchman's Companion** the following particulars:—The entire internal length of nave and aisles will be 98 feet; width of nave, 23 feet 4 inches; width of south aisle, 22 feet; width of north aisle, 9 feet 3 inches; length of chancel, 48 feet 6 inches; width of chancel, 23 feet 4 inches; chancel aisles, each 22 feet 6 inches by 16 feet. There will be a south porch 12 feet by 11 feet in the second bay from the west. The nave and aisles will be seated transversely with open benches. The font will stand under a canopy on the west side of the south door; the pulpit against the north pier of the chancel-arch, and the prayer-desk on the opposite side. The chancel is to be stalled on both sides with subsellæ, all formed of cedar.

Four sedilia will occupy the space to the west of the south-eastern window, and in the north a "sedes majestatis," with a high stone canopy, supported on marble shafts, and terminating in a spire, will be set apart for the bishop.

The style adopted by the architect is the Geometrical. The nave is divided from the aisles by arcades of six arches: the nave-aisles communicate with the chancel aisles by means of arches, and the chancel aisles have arcades of two bays, separating them from the chancel. The roofs of the nave and aisles will be open timbered; that of the chancel vaulted in oak, with moulded ribs, and carved bosses.

BOARD OF HEALTH, DERBY.—On Monday, in last week, at a special meeting of the Local Board of Health, Mr. David Jones, of Mansfield, was appointed surveyor to the Board. The committee appointed to examine testimonials, and recommend to the Board, had received fifty-three applications, and selected two candidates out of that number for the Local Board to choose from.

* Masters, Aldersgate-street.

DR. FARADAY AND JUSTICE TO THE ALCHEMISTS.

WE have occasionally, for the last six or seven years, ventured to withstand the ridicule and contempt to which the old chemists usually called the alchemists had till then been perpetually exposed as the wildest of visionaries and the grossest of impostors. Having had occasion to look closely into the ancient history of chemistry, we found internal evidence in their writings, of the fact, that they were, as a class, neither visionaries nor impostors, and that they were intimately acquainted with the elements we call oxygen, hydrogen, chlorine, even bromine and other of the most recently "discovered" and most recondite of chemical elements. Moreover, we went so far as to point out at some length the singular correspondence between their doctrine of transmutation and Professor Graham's very advanced and enlightened theory of the constitution or nature of metals. As to the alchemists being *merely theorists*, however, in *search of* transmutative agencies, we have clearly shown that this they could not be, for that they gave grave and elaborate, though enigmatical, instructions *how* to transmute the metals, and that therefore they could not rank amongst mere theorists or enthusiastic searchers after such agencies, but must either be the most extraordinary and unaccountable of impostors, or the most practical and matter-of-fact transmuters of metals. The merits of the alchemists are now coming to be regarded in a very different light from that in which they were held before we had the courage thus to question the public opinion in regard to them; and we are now pleased to find a corroboration of the truth of the report that Dr. Faraday, at the last meeting of the British Association, had admitted the principle of transmutation to merit practical investigation; inasmuch as, in a recent lecture by the Doctor at the Royal Institution, on Carbon, it is reported that—

"Towards the conclusion of his discourse, the lecturer spoke emphatically, prophetically almost, on some probable developments of chemistry. The course of experiment had at length brought us, he said, into tracts very similar to those of the alchemists, and although the exact objects proposed by these enthusiasts for solution might not be achieved, chemists are now warranted in expecting results something similar: in short, transmutations of a certain kind, as between elements, were now far from improbable."

Dr. Faraday must reconsider the term "enthusiasts," as applied to the alchemists. As we have shown, they are not entitled to shelter, from utter condemnation as the most unaccountable of liars and impostors, under any such soft and amiable title as that of "enthusiasts." If their *positive teachings* be not irrefragible *truth*, as they solemnly assert them to be, they must be deliberate, unmitigated, and most inexcusable falsehoods, not mere hopeful and "enthusiastic" theories, hypotheses, or illusions. This is a curious question, and one of grave importance in this Californian "age of gold."

NATIONAL EXHIBITION OF ARTS AND MANUFACTURES AT CORK.

THE Exhibition of Irish arts and processes at Cork has been opened: trumpets have been blown, banquets eaten, balls attended, and the fact is accomplished. That it may prove advantageous to the sister country we sincerely hope: at all events, it has given pleasure to many, and will send an extra number of tourists to a country which they ought to know. Our readers are already aware of the size of the various apartments in which the Exhibition is held. The nucleus of the building is the Corn Exchange, which stands upon Albert quay. To this an addition was made, now called the Fine-Arts Hall, 177 ft. long and 53 ft. wide, with a semi-circular roof, with laminated girders, lighted from a continued top-light, 20 ft. wide. A semi-circular end serves as the orchestra. The ball and banquet rooms are fitted up with fluted coloured cotton, with banners and shields: the Fine-Arts Hall is hung with "flocked calico" of crimson colour, a new material executed by the tradesmen in the building.

LETTERS TO A LADY,

EMBODYING

A Popular Sketch of the History of Architecture,

AND THE CHARACTERISTICS OF

THE VARIOUS STYLES WHICH HAVE PREVAILED.*

My dear Sorillah:

I ENDED my last letter at the commencement of the fourth century, when the Emperor Constantine, who had embraced the Christian faith, removed the seat of empire from Rome to Byzantium. Under his rule the followers of the new religion emerged from the caves and crypts to which they had been driven by severe laws, and sought fitting temples wherein to worship God. There were in Rome, as I said, halls built for the administration of justice and as places of assembly for the merchants during winter, called *basilicæ*, and these offered the most convenience for the celebration of their religious rites. In one of the side divisions, or aisles, the male applicants for justice waited, in another the females. At the end next the tribune, and terminating the aisles, there was in some of them a division in a transverse direction for advocates, which simply wanted elongating to make the whole present the form of the cross. The Christian basilica afterwards built in Rome was a repetition of its Pagan predecessor. Constantine was anxious to render his new city equal to Rome, and made extraordinary efforts to effect this. Not merely did he take all the best artificers that were left in the ancient capital, but he carried off marbles, bronzes, and columns, wherewith to construct new edifices. A description of the city, composed about a hundred years after its foundation, enumerates a school of learning, a circus, two theatres, eight public and 153 private baths, fifty-two porticoes, five granaries, eight aqueducts, four halls, fourteen churches, fourteen palaces, and above 4,388 houses distinguished by their size or beauty. As the number and skill of his architects were unequal to the greatness of Constantine's designs, the magistrates of the various provinces were directed to appoint professors, and to induce a number of youths who had received a liberal education to engage in the study of architecture.

Constantinople became the resort of men of skill from all countries. Artists of every kind were invited from various parts, especially from Greece. Constantine raised an enormous number of buildings; but they were built so hastily and with so little care for stability, that in a very short time they required re-erection. Justinian, who ascended the throne of the East in 527, renewed such of his buildings as were left, and with increased splendour. Sta. Sophia, first built by Constantine, and destroyed by fire, was rebuilt by Justinian so magnificently, that he was able to exclaim when he had completed it (thirty-sixth year of his reign), "I have vanquished thee, O Solomon!" Gibbon thinks that the cost of it must have been more than a million sterling.

Anthemius of Thrales and Isidorus of Miletus were the architects of Sta. Sophia. Justinian employed more than 500 architects to repair buildings and erect new ones. Sta. Sophia, as erected by Justinian, was the great type of the second period of Byzantine architecture, and on this was founded all the subsequent architecture of the Eastern world.

Byzantine art necessarily influenced many structures erected in Italy, too. The octagon church of St. Vital, in Ravenna, is an example of early Byzantine art, and St. Mark's at Venice exhibits a strong Byzantine influence.

Some of the features of Byzantine architecture (induced by the use of columns and materials ready to their hands, desire to avoid the appearance of a heathen temple, and increased skill in the construction of vaults) were semi-circular arcades one over the other, semi-circular openings containing within them two or more smaller arches, and the use of Cupolas, the main offspring, indeed, of the style. The body of the churches was covered in many cases by a dome carried on four piers or pillars placed in the centre of the area, so as to form a cross of equal arms, since called the Greek cross. In the Latin cross (the plan of most of our own cathedrals) the transept or transverse arms are shorter than the longitudinal arms—the western arm longer than the eastern. The large flat surfaces which the walls presented led to the use of mosaics, and painted and gilded decorations, in the production of which the Greeks of the lower empire so excelled that some mosaic work was universally termed *opus Græcum*. They maintained their superiority in this respect for several centuries. In the art of fresco-painting and glass-staining they attained considerable skill. Many of their buildings thus decorated, the walls coated with marbles and the cupolas plated with gold, must have presented a dazzling appearance.

Eusebius, in his Life of Constantine, describes many of the buildings erected by him, and shows that they were magnificently adorned. Of the Church of the Apostles, for example, he says (Book III.), that when he had carried the whole of this temple to an immense height, he rendered it splendid with various kinds of stone, encrusting it from the base, even to the roof, with marble. The roof was delicately ornamented and gilt, and the whole building, as a protection against the weather, was covered with brass, which, again, being overlaid with gold, was so resplendent, that it dazzled the eyes of spectators afar off by the reflection of the sun's rays.

To Byzantium, as I have said, we owe the cupola, and, as Hope remarks, so much does this feature prevail in the old churches, both in Italy and in Germany, that the Latin word *domus*, or house, applied to that of worship, *par excellence*, and retained alike in the Italian appellation of *duomo*, and the German one of *dom*, given to the cathedral of each city, has, in French and English, been transferred and restricted to, and become synonymous with that peculiar part thereof more properly called *cupola*.

Mohammedan and Moorish architecture grew out of that of Byzantium; so also the architecture of Russia: its influence, indeed, as you will find, was felt everywhere. For the second time, then, as you see, the Greeks obtained dominion over architecture; and from them again were the first lessons in it given to the world.

I am afraid you will think all this very prosy, but if you will take the trouble to master this period, which forms the turning-point between ancient and modern history, you will find it has a value.

To return for a short time to the ancient capital. Long before the reign of Justinian—namely, in the fourth century—Rome was besieged several times, and ravaged by the Goths, and numberless fine specimens of ancient art were destroyed. When these energetic people, however, obtained possession of Italy, their chiefs showed considerable anxiety to protect rather than injure, and sought by such means as were in their power to advance the arts.

Theodoric, king of the Ostrogoths, who ascended the throne of the western empire in 493, had been educated in Constantinople, and was impressed with the importance of architecture. He called to Rome Greek architects, and, with his minister Cassiodorus, insisted on the preservation of ancient buildings, and aided in the erection of new. At his death, however, which happened after a prosperous reign of thirty-three years, darkness came over Rome, and the arts remained for many years extinct. It must not be supposed that the architecture we call GOTHIC was invented by these Goths. They seem simply to have imitated, at first unskilfully, what was before them. Though the manner of building then in use was actually the mode out of which grew Pointed Architecture, this owed nothing to the Goths. The term "Gothic" was applied to Pointed architecture in much later times by Sir Henry Wotton, and then by Evelyn, simply as an epithet of opprobrium to distinguish it from the works of the classic period.

In the year 553 Rome was re-united to the Eastern Empire. Soon afterwards Italy was overrun by the Lombards, a rude people, who, however, soon attained a considerable degree of civilisation, and influenced greatly both commerce and art.

The Lombards, had no architecture of their own, but they employed the artists of Constantinople, and their buildings were after the Roman manner (*more Romano*),—Romanesque, as it is termed. The Roman basilicæ, and the churches of Byzantium, both assisted to produce the style; and the churches of the Rhine are its noblest results. Semicircular arches, columns of any height according to the necessity, without reference to the diameter, as in classic times, and vaulted ceilings, are amongst the characteristics of the style. They covered the façades of some of their buildings with a number of small arcades, rising one over the other, and enriched them with a profusion of sculptured ornament: the windows were mostly small round-headed openings, and their doorways were richly adorned with shafts at the sides, and sculpture in the semi-circular arches over the square-headed doorway. They adopted the long nave and apses of the Basilica and the dome of the Byzantines; and we have to thank them for one very important new feature, and that is the development of the *bell-tower or steeple*, notwithstanding that towers probably first arose in Constantinople.

This style endured long in Italy, from the invasion of the Lombards to the 13th century, and was variously modified, but I need not trouble you with more minute particulars.

The cathedral at Pisa, which you remember very well, was commenced in 1063 or 1064, was finished in 1113, and became the type for many other churches. The west front presents tiers of small arcades, one above the other. It is

* No. X. See also pp. 100, 133, 164, 196, 228, 260, 292, 324, and 356.

covered with carvings and mosaics, and has bands of blue marble on the face of the wall. You must not attribute the whole of the church, though, as you now see it, to the period mentioned, because it was repaired after a fire in 1596.

The famous leaning tower at Pisa, too, forming one of the singularly interesting group of buildings there, is a later specimen of the same style.

With reference to the progress of architecture on this side of the Alps, let me say here that in the 8th century Charlemagne (and never let us forget this means Charles the Great), bent on restoring civilization, drew from Byzantium, Rome, and Lombardy artists of all descriptions to decorate Germany, as indeed had been previously done on a more limited scale in England and France, so that all over Europe this round-arched style prevailed, until it gave place universally to the Pointed style, of which we have in our own country such noble specimens.

Cologne, the "Rome of the north," one of the most interesting cities in Europe, notwithstanding its bad smells, and that it is,—

"——— a town of monks and bones,
And pavements fanged with murderous stones,"

contains many fine specimens of the Lombard style, some of them showing very strongly the influence of Byzantine art. I dare say you remember the church of the Apostles there, with its absides, steeples, cupola, and galleries of small arches. St. Gereon, too, one of the only two good things that Coleridge found in this city,—

"Mr. Mum's Rudesheimer and the church of St. Gereon,
Are the two things alone, that deserve to be known,
In the body and soul stinking town of Cologne;"

St. Martin's, St. Cunibert's, and several others might be mentioned. The oldest church there, "Santa Maria of the Capitol," is even more Byzantine than the others.

O, pleasant Rhine! Green and swiftly flowing river! with thy castle-crested crags, pleasant villages, picturesque old towns, and world-famous memories, how full of beauty are thy banks! how charming the recollections which I have of thee!

Do you happen to know Poitiers and Angoulême, in France, on the road to Bordeaux? Notre Dame in the first and the Cathedral in the second of these ancient towns occur to me as interesting examples of this round-arched style, Lombardic if you like, but still impressed with the Byzantine stamp. The mention of these places, too, recalls recollections of many bright days and pleasant rambles, with knapsack on back and note-book in hand, at a time when travelling abroad was less easy and convenient than it is now, though not *very* long ago either, but perhaps fuller of incident and more varied in character.

I have mentioned Charlemagne and the 8th century, and this is a satisfactory starting point for modern history. Architecture spreading out from the parent plant, took root in the various countries on this side of the Alps. In tracing its further progess I will, for a time at all events, confine myself to one offshoot, and that will be the branch that grew up in "Merry England."

The magnificence of the Romans, of which something has been said, was not confined to Rome. Amphitheatres, circuses, and villas, were built in all the Italian states, and ultimately all over the world. Wherever the Romans obtained possession there they at once erected buildings, and led the inhabitants to practise the arts of peace. They were teachers as well as conquerors.

The Romans had possession of Britain about 400 years, and during that time erected here theatres, baths, aqueducts, halls, and temples, which they decorated with statues and other works of art. They also instructed the inhabitants, so that until the middle of the 4th century architecture flourished greatly, and Britain became so famous for the excellence of her artificers that they were sent for to go into other countries. For example, when Constantius, the father of Constantine, rebuilt the city of Autun, in Gaul, he was chiefly furnished with workmen from Britain.

Numerous remains of Roman work are still to be found in England, baths, tombs, roads, and city-walls, which attest the extent of their labours. The number of tesselated pavements of great beauty which have been dug up from time to time is quite extraordinary, and fresh discoveries are made every day. Bath is said to have had its temple to Minerva; and London its temple to Diana, where St. Paul's Cathedral now stands. At Lincoln there is a fine Roman Gateway, and so there was at Chester, until a short time ago, when it was destroyed by the Corporation,—to their shame be it said. In Roman walling of stone you will often find occasional layers at regular distances of Roman bricks. These bricks, or rather tiles, are larger and thinner than ours. Their presence, however, is not always a proof of Roman work, for the Saxons and Normans occasionally re-used them in their structures. When the mortar contains small pieces of pounded brick, some antiquaries maintain that the work is undeniably Roman, but there are early records of materials used in the mediæval times which tend to lessen one's faith even in this test: all the concurrent circumstances must be considered to arrive at a correct judgment. Richborough Castle (*Rutupium*), near Sandwich, in Kent, is a fine relic of the Roman occupation of this country, and standing, as it does, far away from any modern construction, deserted and silent, the associations which it recalls are not interfered with. You may people it again with the soldiers of the 2nd Legion, and watch them march through the *Decuman* gate, ten abreast (whence its name):

"I listen, half in thought, to hear
The Roman trumpet blow—
I search for glint of helm and spear
Amidst the forest-bough."

At Leicester, very interesting foundations of a Roman building have been recently opened: indeed, all over the country vestiges of their structures exist. In London, many have been found, but few have been preserved *in situ*. The *Hypocaust* in Thames-street, discovered when preparing for the erection of the new Coal Exchange, and carefully preserved beneath that building, is a most interesting exception. In Trinity-square, near the Tower of London, there is a portion of the Old London Wall, the lower part of which is evidently of Roman workmanship, and shows the bonding-courses of tiles alluded to. This wall would have been destroyed ruthlessly a few years ago, but for the exertions of some who feel the importance of preserving those few relics of the past which time, ignorance, and the course of improvement have left. Monuments of this description become historical evidences, nationally important, and are found to be of the greatest service when tracing those changes in our state and manners which time is constantly effecting. As I have elsewhere said, they are awakeners of sentiment—silent teachers—and have never been destroyed without much after-regret and condemnation.

"Past and future are the wings,
On whose support, harmoniously conjoined,
Moves the great spirit of human knowledge."

The importance of the study of antiquity is now very universally admitted. It was, at one time, the custom amongst the people generally to reward the labours of the antiquary with ridicule and contempt; to consider the investigation of a ruined building, the preservation of a piece of pottery, or the noting down of the manners and customs of past ages, as the mere idlings of weak minds; and that he who so employed himself was not merely unworthy of praise, but deserving of censure for misapplying time. The value of the works of this class of men is now, however, better understood, and therefore more duly appreciated. Through the exertions of these "musty" antiquaries, the civilised world is able to look back upon itself and contemplate, in a great degree, its actual state, so far as regards the arts which flourished, the sciences which were understood, and the consequent position of the people, at various periods of its age; and that, too, not merely in the accounts of contemporary and succeeding writers, but in the very results of these arts so practised,—in the coins used, the dresses worn, the furniture employed in their houses, and the buildings raised for ecclesiastical, for warlike, or for domestic purposes.

The architecture of a people especially, offers important evidence, in the absence of written records, towards the elucidation of their history; perhaps, I may say the most important—for it speaks plainly of the state of society at each particular period, and hints at the degree of knowledge possessed by individuals, or by the people at large. As the comparative anatomist can from one bone determine the size, the shape, and the habits of an animal, which he has neither seen nor heard of, so we may almost discover, from the ruined building of a people, their prevailing habits, their religion, their government, and the state of civilization to which they had arrived.

These relics, then, should never carelessly be suffered to decay, still less be wilfully destroyed. Too much devastation has been committed already, and it is to be hoped that every fresh proposal to remove ancient remains will be examined most seriously before it be acceded to.

Immediately after the departure of the Romans, perhaps before, architecture and the other arts declined in Britain, and by the time that the Saxons arrived in the year 446, were quite extinguished. A hundred years after this the latter had obtained dominion over nearly the whole of Britain, and shortly afterwards began to the extent of their power to imitate the Romans in their policy and arts: they came, I may remind you, from the north-west corner of Germany, contiguous to Denmark. When the Anglo-Saxons were converted to Christianity at the commencement of the seventh century, structures wherein to perform divine service became necessary. The missionaries from Rome brought with them workmen: others were sent for, probably some of them Greeks; and numerous buildings which excited admiration at the time, were erected in imitation of those in Rome and Byzantium. It was the habit not many years ago to term all the most ancient buildings wherein appear short columns supporting semi-circular arches, adorned with zigzag mouldings and rude sculptures, Saxon; but it is now generally maintained, that there are very few buildings remaining in England of that date, and that those so pointed to belong to the Norman period. Doors, windows, and towers are to be found, but there are few whole buildings which can with certainty be termed Saxon. In truth, however, there may really be more than some architectural antiquaries are disposed to admit. Anglo-Saxon architecture was, in its broad character, that round-arched style which I have spoken of as Romanesque and Lombardic, and so was the Norman which followed. The differences they presented require more minute analysis than I can expect you to follow. I may mention, however, some obvious features which belong especially to it, the occurrence of which would enable you to say that the building in which any one of them appeared, belonged to a period before the Norman Conquest, though their absence alone would not enable you to pronounce to the contrary. Amongst them are angular-headed openings, or straight-sided arches, as they are sometimes called, which are also found in the earlier Romanesque works of Germany and France. You will remember, too, that I described them as occurring in the works of the early nations.

Fig. 22 is a sketch of one of these arches, in the lower part of the tower of Trinity Church, Colchester, which is of the Saxon period. The angles of buildings ascribed to this æra are often formed of hewn stones placed alternately flat and on end, which have been called "longs and shorts;" the walls often show flat strips of stone running up the face of them, and projecting slightly from the surface, appearing like the uprights in a timber construction, where the spaces between are plastered. Another peculiarity is the occasional use of a rude baluster (a short swelling shaft divided by a band in the middle) to form a

window into two lights, as in the tower of St. Benet's, Cambridge, and the church of Earl's Barton, Northamptonshire.

Of the domestic architecture of the Anglo-Saxons I need say nothing. Their houses were for the most part rude, and their requirements simple. The chief and his "hearthmen," or "hearth companions," as they were expressively termed, sat by the fire at which their meat was cooked, and shared the same sleeping apartment. They had able artizans nevertheless, good workers in iron and the other metals especially, and were altogether much more advanced as a people when they were overcome than is usually thought. Their descendants have been manfully fighting their way upwards in their own country ever since, and have fought a fight for the world at the same time.

But I must conclude, or I shall weary you.

Believe me with equal respect and regard,

Sincerely yours,

Reggeo.

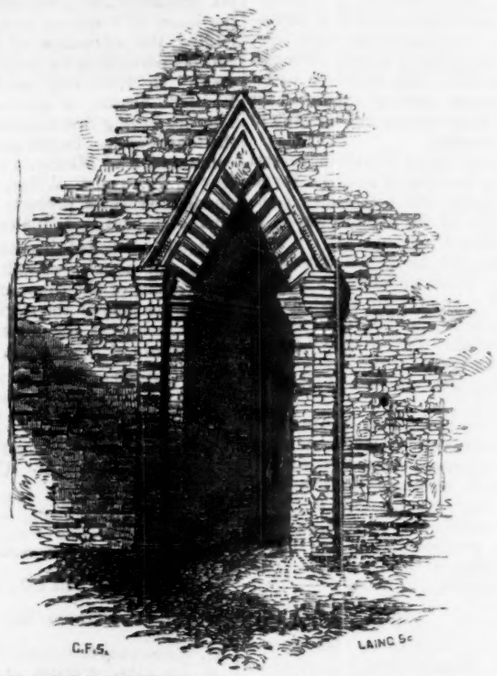

Fig. 22.—SAXON DOORWAY IN THE TOWER OF HOLY TRINITY CHURCH, COLCHESTER.

THE HOUSES AND SHOPS OF OLD LONDON.*

THE sketches given in connection with our last paper are almost the only pictorial records we have of London previous to the publication of Agas's bird's-eye view of London in the reign of Queen Elizabeth (1558—1603). This scanty supply of information is the more to be regretted when we consider how few specimens of the street architecture of London remain which can, at the present time, be recognised as belonging to the period to which we have alluded. After several years' careful examination of London antiquities, so far as we have seen, the house in Tothill-street, Westminster, (No. 7), is, with the exception of Gerrard's Hall, the oldest fabric for commercial purposes which exists in a tangible shape at present. No doubt there are portions of buildings of an equally old date remaining; but these have been almost as much changed for their greater convenience and preservation as the knife of the sailor, which had been twice rebladed, and once treated with a new handle. The Cock at Westminster is composed in a similar style of massive Gothic timber-work to the example, No. 6, which has for some years been demolished. Respecting the ancient hostelry, there is a tradition that it was used as a lodging and pay house by the workmen engaged in the erection of Henry VII.'s Chapel at Westminster Abbey. This inn was old, even in the time of Stowe, and in further corroboration of the above tradition, some carvings of considerable antiquity and of much beauty of design and execution are still preserved inside the house, which are said to have been the work of artists employed at Henry VII.'s Chapel. The sign of the house (the Cock) has, no doubt, been intended originally as the emblem of St. Peter, the patron saint of Westminster Abbey. It is also stated that the first stage-coach which ran from London started from this place. The present exterior appearance is very picturesque, although plastered and painted. Several steps descend into the interior, which is built in a substantial manner, with huge beams of chesnut, as shown in engraving No. 8.

It has been mentioned by several (amongst others, by Saunders, in Charles Knight's "London"), that a considerable portion of the Tabbard Inn, in the Borough, is of the time of Chaucer, and was probably the identical hall in which were assembled the pilgrims so graphically described by the great poet. We are sorry to be obliged to differ from this opinion, which is so interesting in associations, for, after a careful examination of the Tabbard, the writer is led to think that there is no portion of the present building older than the time of James I.

Smith, in his "Antiquities of London and Westminster," says: "The instances of early dates on buildings in London are very rare: I have only met with two, those of 1595 and 1599, the former on the bracket of a house on the east side of Gray's-inn-lane" (see our engravings, Nos. 17 and 18), "the latter across the back beam of a house in Duke-street, West Smithfield (No. 6).* It must not be concealed that a date of 1430 is to be seen on the front of the White Hart, Bishopsgate-street."

The houses lining the streets of London previous to the reign of James I. appear not to have been remarkable for the extent of their carving or decoration, but were probably intended more for use than ornament. The circumstance that the houses built opposite the cross in Cheapside were looked upon at the time of their erection with wonder for their richness and beauty, together with the *existing drawings*, leads us to suppose that few domestic buildings existing in London at that time were at all to be compared with those of Coventry, Chester, &c.

Norden states, with regard to domestic architecture, that till late in the reign of Henry VIII. there were few high buildings, and fewer of stone, in the metropolis, or in England, excepting the palaces of the first nobility, cathedrals and parish churches, and the greater monasteries: the rest were mostly mud wall tenements of the cottagers, lesser free-traders, and villagers. The timber and lath buildings of cities and towns were houses erected with strong oaken posts interlaced with bricks and mortar, and which, like the examples in Tothill-street and Duke-street, would have stood several hundred years, unless purposely removed or destroyed by fire.

Houses in former times, before they were erected, were framed ready; that is to say, that while their foundations were being dug in one place, the timbers were being framed in another. In the time of Edward III. his exchequer was in a building called Cornet's Tower, which must have stood about the west end of the Poultry. This tower afterwards came into the possession of Buckle, or, as Stowe calls him, "one Buckle." This worthy citizen, who was of the Grocers' Company, considering a shop of more use than the ancient tower, resolved to pull it down, and erect a more fashionable edifice. During the demolition he was killed by the falling of a beam, and his widow shortly afterwards married, and her second husband set up the frame of timber which had been commenced by his predecessor.

Nonesuch-house (16), which formerly stood on Old London-bridge, was brought from Holland, and was so called because it was entirely constructed of wood, brought over in pieces from Holland, and erected in this place, with wooden pegs only. This remarkable edifice stood on the seventh and eighth arches of Old London-bridge from the Southwark end. On the London side of the bridge the Nonesuch-house was partly joined to numerous small wooden dwellings, of about 27 feet in depth, which hung over the parapet on each side, leaving, however, a clear space of 20 feet in the centre: over all these its carved gables, cupolas, and gilded vanes majestically towered. Two sun-dials, declining east and west, crowned the top on the south side, on the former of which was painted the old and appropriate admonition, "*Time and tide wait for no man.*" The southern front shown in the engraving, was unconnected with any building, and must have had an excellent effect, and presented the appearance of a large building projecting over the bridge on either side. The whole of the front was ornamented with a profusion of transom-casement windows, with carved wooden galleries before them; and richly sculptured wooden panels and gilded columns were to be found in every part of it. In the centre was an arch of the width of the drawbridge, leading over the bridge; and above it on the south side were carved the arms of St. George, and those of Elizabeth, France, and England, quarterly. From this circumstance, and from a building answering the description of Nonesuch-house being mentioned in a document of the date 1585, it is supposed that this structure was erected during the reign of Queen Elizabeth. Many of the old houses near the Southwark end of London-bridge (13) were also brought from Holland.

Although the houses of Old London, up to the period at present under notice, would appear, with a few exceptions such as Nonesuch-house, to have been only plain and substantial, yet we learn from various accounts, that the interiors were greatly adorned with tapestry, and leather hangings, richly gilt and ornamented. Turkey and Persian carpets are seen in paintings of this period, covering the tables of the rich and middling classes of the community: the floors were still strewed and matted with rushes, although the ceilings were richly decorated. Stephen Perlin, a French physician, who visited England in the time of Edward VI. says, "The English make great use of tapestries and of painted linens, which are well done, and on which are many magnificent roses, embellished fleurs de lis and lions, for you can enter but few houses where you do not find these tapestries." In the time of Queen Elizabeth ornaments of china for domestic purposes had been brought from Italy, but shortly after her death (about 1631) they became regular matters of importation by the East India ships.

* See p. 342, *ante*.

* This date was only on a portion of the house, and was probably added some time after the buildings were erected.

The extent and increase of London during the reign of Queen Elizabeth caused the greatest alarm to the Government; yet in comparison with the present extent and progress of London, how idle, at a first glance, seems the fear: still when we consider the sanitary condition of London at that time, and the imperfect state of the roads throughout England, we cannot wonder at the dread, particularly as plague and famine were frequent visitors to Queen Elizabeth's London citizens. In Agas's Map of London there are only a few houses shown outside the City wall from St. Botolph's, near the Tower, to Bishopsgate: the Spital-fields are without a house, and the space which is at present occupied by a dense population of silk weavers, &c. is studded on the map with archers practising their games, and cows and milkmaids. The continuation of Bishopsgate-street is shown with a single line of houses on each side, stretching as far as Houndsditch. From Bishopsgate to Moor-gate there are only one or two detached houses outside the wall: one of them is called the "Dogge House:" here in the green fields are numerous persons bleaching linen, &c. The Finsbury-fields are shown with footpaths across, the only buildings upon them being four windmills. The space between Broad-street and Coleman-street is occupied by large gardens. Outside Cripplegate, Grub-street, now Milton-street, and one or two other small streets are shown: except these buildings, all is fields and gardens. Aldersgate-street, from the corner of Barbican runs but a short distance. The Charter House abuts upon the fields. The "Schmyt Fyeld" is planted with two rows of trees: the sites occupied by the houses 22 and 25 are marked as built upon: Cock-lane, Hozier-lane, and Coney-lane are short rows of houses leading to the fields. Cow-cross and a portion of St. John's-street, Clerkenwell, and a few houses at Holborn-bridge, end London in that direction. Field-lane is planted with trees, the Fleet running at their side. Ely-gardens, mentioned by Shakespear, as famous for the growth of its strawberries, are shown of great extent. Holborn has a single row of houses on each side, with fields on the north, and gardens and plantations on the south. Gray's-inn-lane is the only branch to the north in the whole extent of Holborn, and the house, No. 18, which is still near Liquorpond-street, is probably that shown in the map as the end of London in this part. Holborn continues until about as far as Red Lion-street, and then becomes a country road, with hedges on each side, and so continues to the little village of St. Giles, which is in the midst of fields. No houses appear nearer than the Strand on the south. St. Martin's-lane and the Haymarket are green lanes, through which the Oxford-road and the "Waye to Redinge" pass.

What changes have taken place since that day! what wonderful extension! and still London in 1852 is not only better supplied with provisions than in the time of Elizabeth, but also vastly improved, notwithstanding our numerous abuses, in sanitary condition.

In addition to the sweating sickness, the plague, during the reign of Queen Elizabeth, visited London several times: in 1563, 20,372 persons died; in 1569, a very large number. About this time the City laid out 814*l.* 15s. 8d. in cleansing the City ditch, between Aldgate and the Postern on Tower-hill, and making a new sewer and wharf of timber from the head of the Postern into the Tower-ditch, which before this time had always laid open. In 1590, nearly 11,000 persons died; and in 1603, the year in which Elizabeth died, the plague carried off 30,578 persons, 3,090 of whom died in one week.

In 1579 the alarm to which we have alluded respecting the increase of London, was so great that an inquisition was ordered to be taken of the number of foreigners in London, when it appeared that the number had increased threefold in twelve years. In 1567, the number of strangers in London was, Scots, 40; French, 428; Spaniards and Portugese, 45; Italians, 140; Dutch, 2,030; Burgundians, 44; Danes, 2; Liegois, 1; in all, 2,730: in 1579, the number was 8,190. This increase produced a remonstrance from the Lord Mayor and aldermen against the number of new buildings and inhabitants within the city and suburbs of London. In consequence of which her Majesty issued a proclamation, forbidding any new buildings of a house or tenement within three miles from the gate of the City, where no former house could be remembered to have stood, and likewise not to suffer more than one family to inhabit any house. The Lord Mayor was empowered to commit offenders against this proclamation, or to hold them to bail.

In 1564, the common council of London ordered that all such citizens as should thenceforth be constrained to sell their household goods, leases of houses, or such like, should first cause the same to be cried through the City by a man with a bell, and then to be sold by the common outcrier appointed for that purpose, and he to receive one farthing in the pound for his trouble.

During the reign of Queen Elizabeth, several improvements were introduced amongst them. A description of police was established composed of beadles, &c. of the various wards, to preserve order amongst vagrants, &c.

In 1556, Christopher Draper, alderman of Cordwainer-street Ward, appointed a man to go about his ward at night with a bell, and at certain places, with an audible voice, to bid the citizens be careful of their fires and lights, to help the poor, and pray for the dead. This institution was soon after adopted in all other parts of the City.

In the year 1566, a proposition was made by Sir Thomas Gresham, merchant, of London, to erect, at his own expense, a commodious building for merchants to meet and transact business, provided they would find a convenient site for the same. The citizens, agreeing to this proposal, purchased, for the sum of 3,532*l.* eighty houses in the two alleys called New St. Christopher's and Swan Alley, leading out of Cornhill into Threadneedle-street, the materials of which eighty houses were sold for 478*l.* and the ground, being cleared, was conveyed to Sir Thomas Gresham, who, on the 7th of June, accompanied by several aldermen, laid the first brick of the new building: each alderman also laid a brick, and a piece of gold for the workmen, who persevered with such assiduity that the building was roofed by the month of November in the next year, and was soon after finished under the title of the Burse (14). On 23rd Jan. 1570, Queen Elizabeth, attended by the nobility, went into the City and dined with Sir Thomas Gresham at his house in Bishopsgate-street. After dinner her Majesty returned through Cornhill, went into the Burse, and after viewing it in all parts, commanded proclamation to be made by a herald, with sound of trumpet, that thenceforth it should go by the appellation of the Royal Exchange.

Sir Thomas Gresham, by will dated 26th November, 1579, devised the Royal Exchange, its profits, &c. to the Mayor and citizens of London and the Company of Mercers, to be equally enjoyed amongst them, on condition that the citizens, out of their moiety, should pay a salary of 50*l.* per annum each to four persons, who should read lectures in divinity, astronomy, music, and geometry, in Gresham College, and to pay 6*l.* 13s. 4d. per annum each to eight almspeople situate behind the said college, in Broad-street, and 10*l.* yearly to each of the prisons of Newgate, Ludgate, King's Bench, Marshalsea, and Wood-street Compter;—that the Mercers, out of their moiety, should pay 50*l.* each per annum to three persons to read lectures in law, physic, and rhetoric, in his Mansion-house, and 100*l.* for four quarterly dinners to be provided in their hall for the entertainment of the whole company, and also to pay 10*l.* per annum to the following places, viz. the Poultry Compter, Christ's Hospital, St. Bartholomew's, the Spital, Bethlehem, and St. Thomas's.

In 1576, Mr. William Lamb, citizen and clothworker, erected a conduit on Snow-hill, which he fed from a water source near the Foundling Hospital: part of the covering of this well is still remaining in a garden near the "Lamb," Lamb's Conduit-street. An effigy of this public benefactor will be found in the chapel attached to an hospital endowed by him, at the north end of Monkwell-street, Cripplegate.

In 1582 Peter Maurice, a German engineer, proposed a scheme to the Lord Mayor and aldermen for erecting a machine to supply the City with Thames water, which scheme being approved of, the same was erected in the river, near London-bridge. As an encouragement for this piece of ingenuity, Maurice obtained a lease of one arch, and a place for fixing his engine upon the north end of London-bridge, for the term of 500 years, at the rent of 10s. per annum. Two years after this he obtained the lease of a second arch, and the citizens finding the advantage of this invention, he and his posterity grew wealthy by its improvement. In 1701 they sold the property to Richard Soams, a goldsmith, for 36,000*l.* Maurice having first obtained another lease of the fourth arch. Soams got from the City a confirmation of Maurice's lease at the yearly rent of 20s. and 300*l.* fine, after which Soams divided the whole property in 300 shares, at 500*l.* each, and made it a company.

Having extended this notice as far as our space will permit, we will give, in our next, illustrations of the shops and houses in London at the time of the reign of James I. and glance briefly at the history of the domestic architecture of that period.

REFERENCES TO THE ENGRAVINGS.

13. Old Houses near the south end of London-bridge, from a view of London published at Amsterdam, 1616.
14. Front of the first Royal Exchange, built by Gresham, 1566-67. (Wilkinson's *Londina Illustrata.*)
15. The Custom-house, from a print in Wilkinson's *Londina Illustrata*, copied from a scarce engraving of the date of 1634.
16. Nonesuch House, formerly on London-bridge, from Agas's Map.
*17. Bracket, with date 1595, on house in Gray's-inn-lane.
*18. Elizabethan House, east side of Gray's-inn-lane.
19. House and Shop, West Cheap, as it appeared in 1585, engraved in Wilkinson, from a drawing by R. Triswell.
20. House formerly in Grub-street (now Milton-street). (Smith's Antiquities.)
*21. Bracket on house in Milton-street.
*22. Houses in Long-lane, Smithfield.
*23. Part of House in Carey-street, Chancery-lane.
*24. Old House, St. Clement's-lane, Strand.
*25. House in Long-lane, Smithfield.

The engravings marked * are drawn from existing examples.

PARSEY'S COMPRESSED AIR LOCOMOTIVE.

AFTER a long absence Mr. Parsey has again appeared: having built an experimental compressed air engine, permission was given to try it on the Eastern Counties Railway on the 25th May last, when the locomotive, with eight persons on it, travelled (as we are informed) from Stratford Station to Lea Bridge and back, a distance of four miles. The engine weighs about 1½ ton, pistons 9 in. stroke, 2½ diameter, capacity of the reservoirs of highly compressed air, about 39 feet, which were charged to 11 atmospheres, or 165 lbs. per square inch. The regulator was set to give an uniform pressure on the piston of about 20 lbs. per inch. The object of this part of the engine is to keep a self-acting uniform working pressure. The gradual decline of pressure has hitherto been the failing point of all attempts to make use of compressed air as a motive power. We are told that less than 40 cubic feet at a density of 11 atmospheres drove the engine and eight persons four miles —about 2 tons, from which data some idea of the cost of power may be ascertained. This is the first time a compressed air engine has run upon a railway.

THE IRON TRADE.—Prices, it is reported, are looking up, and orders are on the increase. Some charcoal iron has been imported from Nova Scotia, and it is thought that this iron, which is well adapted for steel of the best quality, and which obtained a medal at the Great Exhibition, may ultimately compete with that from Sweden and Russia.

THE HOUSES AND SHOPS OF OLD LONDON.

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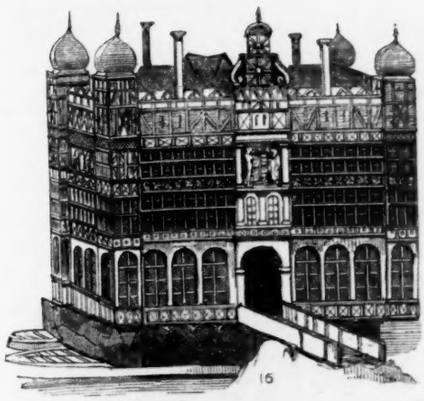
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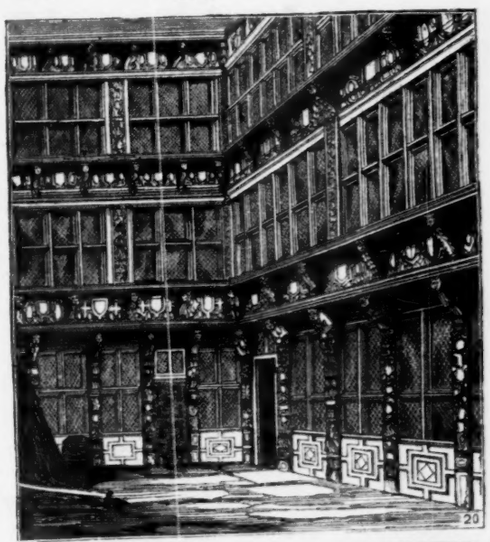
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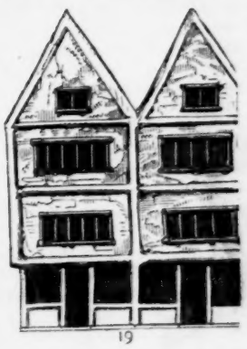
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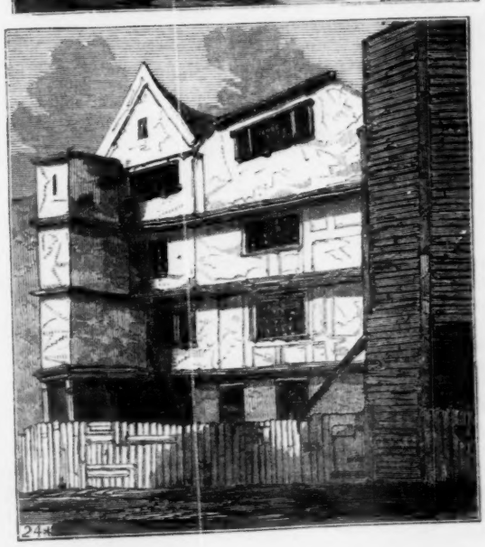
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LAING Sc.

LECTURES ON PRACTICAL ART AT MARLBOROUGH-HOUSE.

THE following are the propositions enforced by Mr. Owen Jones in his second lecture. The subject was, "The laws which govern the employment of colour illustrated by the woven fabrics of the collection."

14. Colour is used to assist in the development of form, and to distinguish objects or parts of objects one from another.

15. Colour is used to assist light and shade, helping the undulations of form by the proper distribution of the several colours.

16. These objects are best attained by the use of the primary colours on small surfaces and in small quantities, balanced and supported by the secondary and tertiary colours on the larger masses.

17. The primary colours should be used on the upper portions of objects, the secondary and tertiary on the lower.

18 (Field's Chromatic Equivalents). The primaries of equal intensities will harmonise or neutralise each other, in the proportions of 3 yellow, 5 red, and 8 blue,—integrally as 16.

The secondaries in the proportions of 8 orange, 13 purple, 11 green,—integrally as 32.

The tertiaries, citrine (compound of orange and green), 19; russet (orange and purple), 21; olive (green and purple), 24; integrally as 64.

It follows that,—

Each secondary being a compound of two primaries is neutralised by the remaining primary in the same proportions,—thus, 8 of orange by 8 of blue, 11 of green by 5 of red, 13 of purple by 3 of yellow.

Each tertiary being a binary compound of two secondaries is neutralised by the remaining secondary—as 24 of olive by 8 of orange, 21 of russet by 11 of green, 19 of citrine by 13 of purple.

19. The above supposes the colours to be used in their prismatic intensities, but each colour has a variety of *tones* when mixed with white, or of *shades* when mixed with grey or black.

When a full colour is contrasted with another of a lower tone, the volume of the latter must be proportionally increased.

20. Each colour has a variety of *hues*, obtained by admixture with other colours, in addition to white, grey, or black: thus we have, of yellow,—orange-yellow on the one side and lemon-yellow on the other; so of red,—scarlet-red and crimson-red; and of each every variety of *tone* and *shade*.

When a primary tinged with another primary is contrasted with a secondary, the secondary must have a hue of the third primary.

21. In using the primary colours on moulded surfaces, we should place blue, which retires, on the concave surfaces; yellow, which advances, on the convex; and red, the intermediate colour, on the undersides; separating the colours by white on the vertical planes.

When the proportions required by proposition 18 cannot be obtained, we may procure the balance by a change in the colours themselves; thus, if the surfaces to be coloured should give too much yellow, we should make the red more crimson and the blue more purple—*i. e.* we should take the yellow out of them; so if the surfaces should give too much blue, we should make the yellow more orange and the red more scarlet.

22. The various colours should be so blended that the objects coloured, when viewed at a distance, should present a neutralised bloom.

23. No composition can ever be perfect in which any one of the three primary colours is wanting, either in its natural state or in combination.

24. When two tones of the same colour are juxtaposed, the light colour will appear lighter, and the dark colour darker.

25. When two different colours are juxtaposed they receive a double modification,—first, as to their tone (the light colour appearing lighter and the dark colour appearing darker); secondly, as to their hue, each will become tinged with the complementary colour of the other.

26. Colours on white grounds appear darker; on black grounds, lighter.

27. Black grounds suffer when opposed to colours which give a luminous complementary.

28. When ornaments in a colour are on a ground of a contrasting colour, the ornament should be separated from the ground by an edging of lighter colour,—as a red flower on a green ground should have an edging of lighter red.

29. When ornaments in a colour are on a gold ground, the ornaments should be separated from the ground by an edging of a darker colour.

30. Gold ornaments on any coloured ground should be outlined with black.

31. Ornaments of any colour may be separated from grounds of any other colour by edgings of white, gold, or black.

32. Ornaments in any colour, or in gold, may be used on white or black grounds, without outline or edging.

33. In "self-tints," tones, or shades of the same colour, a light tint on a dark ground may be used without outline; but a dark ornament on a light ground requires to be outlined with a still darker tint.

NOTES IN THE PROVINCES.

Cambridge.—A proposal was recently made to erect a new lunatic asylum for Bedfordshire, Cambridgeshire, &c. at a cost of about 50,000*l.* for 500 or 600 patients; Cambridge to subscribe 20,000*l.* Bedford and Herts 15,000*l.* each, and Hunts 10,000*l.* Cambridge, however, has resolved to proceed at once with the building of its own asylum, Bedford having declined the proposed union. Tenders are accordingly to be advertised for. The county, isle, and borough, it appears, contain about 180 lunatic and idiots.

Warwick.—Mr. Rammell, C.E. accompanied by Mr. J. Tibbits and the surveyor, has been examining the various sources of water supply for this borough. Mr. Rammell is to report to the Local Board of Health.——Extensive improvements and additions are about to be made to the Grand Stand on the race-course at Warwick. The committee have resolved on expending about 700*l.* upon the work.

Oulton Park, Cheshire.—The new schools recently erected within the precincts of the park, through the munificence of Sir Philip Malpas De Grey Egerton, bart. have just been completed. The provision for the children consists of two school-rooms (connected by a cloister), and residences for the mistresses attached. The design is of Early Decorated character, by Mr. Chas. Vickers, of London.

Rugby.—The first stone of the intended Church of the Holy and Undivided Trinity, at Rugby, was laid on Monday week.

Great Crosby.—The ceremony of laying the foundation-stone of the new Church of St. Luke, Great Crosby, was performed on Wednesday week. The church is being built from a plan designed by Mr. Arthur Holme.

Nottingham.—The debt on the parish church has been liquidated, and the vicar will now take steps for the erection of two new district churches, one in Millstone-lane, and the other at the top of Back-lane, near the general cemetery. The plans have been prepared for some time, and each building, it is said, is to accommodate upwards of 500 worshippers.

Sheffield.—The Gas Consumers' Company have accepted the tender of the Butterley Iron Company, for the supply of about 2,000 tons of mains and pipes.——The foundation-stone of the schools about to be erected in connection with Trinity Church, Wicker, was laid on Monday in last week. The schools, which will be built from designs of Messrs. Flockton and Son, will be a plain edifice. There will be accommodation for about 500 scholars. The total cost will be about 2,600*l.* but of this, 1,200*l.* has been paid for the site. The Committee of Council on Education have given 620*l.* and 200*l.* were from the National School Society. The rest has been raised by private subscription.

Elsecar.—This village is situated near Wentworth, and on the estates of Earl Fitzwilliam, at whose expense chiefly there have just been completed, at a cost of nearly 1,000*l.* exclusive of a grant from government, a set of school-buildings containing a mixed school, infant school, and class-rooms, together with a teacher's residence. The opening of these schools was celebrated on Whit-Tuesday.

Balderstone.—The church of St. Leonard's is in a fair way of being replaced with something more in character with the sacred object for which it is set apart, than that which the present rude and ruinous structure presents. The tenders were opened on Friday last, when the Messrs. Hargreaves, builders, Clitheroe, were declared the successful competitors. We are informed that the works will be proceeded with immediately, and that it is intended to lay the foundation-stone on the 22nd of next month.—*Blackburn Standard.*

East Retford.—The ancient font in the parish church has been restored, under the superintendence of Mr. George G. Place, of Nottingham, architect. Mr. W. Lee, of Boston, builder, was the supervising draughtsman, and Mr. John Mee, of Derby, the operative sculptor. The cost has been defrayed by an inhabitant; and the improvement has led to the restoration or rebuilding of the porch by some other gentlemen connected with the parish, who have contracted with Mr. Lee for the work. An offer has also been made to restore the great western entrance, which is in a dilapidated state; and it is thought not improbable that other parts, if not the whole edifice, may thus by degrees be restored, in consequence of the example given in the case of the font.

Bradford.—The proposed cemetery for Bradford is in a fair way towards realization, as the company for carrying out the project has been formed and registered, and the purchase of a site is to be effected forthwith.

Doncaster.—The erection of St. James's Bridge across the Great Northern and South Yorkshire railways, at the point where the latter joins the former, is now proceeding with activity. The stone-work at the base of the piers has been commenced by the contractors, Messrs. A. and G. Holme, of Liverpool. The approach is abrupt. The bridge will consist of seven arches, one of which will be a skew. Each arch will be of 24 feet span. They will be of the flat segment kind, with moulded cornices. The height of the arches from the level of the rails will be 16 feet; and from the top of the bridge to the level of the rails, 22 feet. The extreme length of the bridge will be about 230 feet. It will be of stone, except the filling up of the arches. The stone-work will be stroke-tooled and chamfered quoins, plinths, imposts, arch-quoins, coping, &c. The ashler work between will be rock-faced. The works are under the engineering skill of Sir William Cubitt, and Mr. Thomas Glaister, the manager to the Messrs. Holme. The estimated cost is between 3,000*l.* and 4,000*l.* The stone is from the quarries of Messrs. J. and T. Palfreyman, of Mexborough, who have contracted to discharge eighty tons per day. The approach each way to this bridge will be very steep. Cherry-lane will be considerably widened. The opening will take place before Doncaster races.

Sunderland.—The south entrance to the new docks at Sunderland is now finished. Another dock of ten acres is agreed for. The directors have arranged with the Marquis of Londonderry to bring 60,000 chaldrons of coals along the Pensher branch railway to the docks as soon as the rails are laid.

Edinburgh.—The rental of the city of Edinburgh, within the police bounds, has risen, it is said, during the last five years, more than 20 per cent. The rental now is somewhere about 450,000*l.*—more than 100,000*l.* having been added to it within the time specified. It is understood that rents have reached a maximum, and that no attempt will be made to increase them further.

Dunkeld.—Preparations are being made to erect an episcopal church, with schools attached, at a cost of about 3,000*l.* Large subscriptions have already been made. The only licensed place of worship within a circuit of twelve miles of Dunkeld, in connection with the Scottish Episcopal Church, is in a hired room over a coach-house.

Guernsey.—The contract for the harbour works at St. Peter's Port is not yet signed; but the contractors are opening the quarries and forming a road on the islet of Jethou for the shipment of the stones.

Walcot.—A new church has been consecrated here; Mr. Warner Goodman, architect. An ecclesiastical appearance has been obtained with small expenditure. It will accommodate 200 adults, and cost 450*l.*!

THE HARMONIOUS RELATIONS OF COLOUR.—A diagram to illustrate the harmonious relations of colour has been prepared for the use of schools in connection with the department of practical art, and is published by Messrs. Chapman and Hall. It will be found useful in architects' offices and elsewhere.

Notices of Books.

The Building erected in Hyde Park for the Great Exhibition of the Works of Industry of all Nations, 1851. By CHARLES DOWNES, Architect, and CHARLES COWPER, C.E. London, John Weale. 1852.

So many descriptions of the Exhibition Building have been published, that some readers will, perhaps, ask what occasion there can be for the portly quarto here described. Never was there an event so fully chronicled, never was there a building so minutely described! The present work, nevertheless, stands alone: it consists of 28 large plates by Mr. Downes, from the working drawings of the contractors, with technical descriptions by Mr. Charles Cowper. Besides plans and elevations, the plates give the details of columns, wood trusses, and wrought and cast iron girders, the galleries, roofs, gutters, trusses, in fact, of the whole construction, so that those who desire to erect a similar building, or to apply, without the trouble of thinking for themselves, any of the arrangements used there, may do so.

Every one knows that the dimensions of the building are multiples and sub-multiples of one primary dimension, 24 feet; but what fixed this primary is not so generally known. Mr. Cooper says:—"To facilitate the whole of the operations, they determined to adopt one unit of length throughout the building. It was found that sheet-glass could be procured of the length of 49 inches, but that a greater length would be much more expensive, from the difficulty of blowing and handling such long pieces. Glass of this length, placed on a slope of 2½ to 1, was found suitable for a ridge and valley roof, in which the pitch on distance from centre to centre of gutters is 8 feet. Three times this pitch, or 24 feet, was considered to be a convenient length for the cast-iron girders, and was, therefore, adopted as the unit of length. The wider avenues were made twice this unit, or 48 feet wide, and the central avenue, or nave, was made three times this unit, or 72 feet wide. We thus see that the difficulty of manufacturing glass of greater length than about 4 feet was the primary cause which determined the dimensions employed throughout the building."

All the plates are very clearly drawn and lithographed.

Ancient Halls of Lancashire. From original Drawings by ALFRED RIMMER, Architect. Liverpool, Deighton; London, Bogue. 1852.

WE have here, in a thin quarto, twenty plates, on stone, illustrating a number of the old halls of Lancashire; as, for example, Peel Hall (half timbered); Wardley Hall (the same); Smithell's Hall, a fine panelled dining-room; Hoghton Tower, one of the best of the views; Salmesbury Hall; Rufford Hall, with its bold roof; and others. Salmesbury Hall has a fire-place 14 feet 10 inches wide. One of the purposes of the large fire-places was, according to a family MS. of the Cunliffes, that the young folks could sit and crack nuts and divert themselves, and "in this manner the sons and daughters got matching without going much from home."

There is a quaintness in the writings of early days amusing, and sometimes touching. Take this extract from the diary of one John Ireland, when he was building an old hall in Newton Valley, between Liverpool and Manchester: the date is 1634:—

"'Oct. the 13th, 1634.—Aboute buildinge I did spend the whole of this day * * * * Resonably well spente I this day in sivell outeward cariage; but inwardlye I am but worldly miended, could in devotion, and quite could in zeal, too earthly minded and troubled aboute bilding.

16th.—This was our rearinge day, and about this busines I spent this whole day.

17th.—Much troubled with bildinge.

19th.—Sunday, my minde verye much disquieted about my bildinge.

24th.—Incumbered very much with my bildinge.

Nov. 11.—Aboute my bildinge I spent all this whole daye: worldlye miended, and my thoughts are very much entangled about my bildinge.

December 1st.—This morning, after I had saied my morninge prayers, I wente to the new bildinge, and theare my selfe alone did pray and meditate.' &c. The window dressings of this house are enriched with stone diamonds and fleur de lis, coloured black."

Mr. Rimmer's book offers two subjects for regret—1st, that it does not include *all* the halls in the county; and 2ndly, that through want of previous acquaintance with lithography the drawings are not so effective as they might be. So many ancient buildings, however, have been swept away of which we have no record, that he has our thanks for what he has done.

The British Winter Garden: being a practical Treatise on Evergreens; showing their general Utility in the Formation of Garden and Landscape Scenery, and their Mode of Propagating, Planting, and Removal, from One to Fifty Feet in Height; as practised at Elvaston Castle. By WILLIAM BARRON, Head Gardener. Bradbury and Evans. London, 1852.

The Flower, Fruit, and Kitchen Garden: containing full Directions for the Hothouse, the Greenhouse, and every Branch of Fruit, Flower, and Vegetable Culture. By Practical Gardeners and Florists. Lloyd, London.

The Gardener's Record, and Amateur Florist's Companion. Under superintendence of Mr. J. T. NEVILLE. London, Groombridge. Nos. 1 to 4.

IN the first of these little volumes we have an explanation of all those mechanical and other processes through which the constant verdure and pictorial landscapes of Elvaston have become celebrated; and whereby desired *effects* may be at once produced by transplantation of trees of nearly all sizes and ages by wholesale, without the necessity of awaiting the slow processes of Nature's gradual adornment by the growth of trees planted only in their infancy. The volume also contains advice as to the species and habits of trees desirable for such purposes, and as to modes of distribution. The author, we observe, contemplates the publication of fifty lithographs from calotype views taken at Elvaston, whenever a sufficient number of subscribers have indicated their desire to possess them.

In the second book of the lot we have, month by month, all that is likely to require attention in the ordinary conduction of gardening operations. The book is cheaply got up, but it contains a good deal of miscellaneous and useful information to all who delight in ornamenting the vicinity of their domiciles with the ever-varying beauties of nature, or wish to do so.

The last of the trio at the head of this notice, is a pleasant and promising cheap serial, which adds, to the practical information it gives, a touch of that sentiment and poetry properly belonging to Nature's pets.

GREAT YARMOUTH.—The association for promoting the prosperity of Great Yarmouth have issued a statement of the objects they have in view, which comprise the establishment of public amusements, such as concerts, instrumental music at promenades, balls, &c.; and also the advocacy of public improvements, as by the suggestion of a public company to erect a promenade pier, extending from Victoria-terrace 650 feet into the sea, or 100 feet beyond the present jetty, so as to allow steamers to land passengers; the formation of a public promenade and carriage-drive from Victoria-terrace to Britannia-terrace, with approaches from the town and the beach; the widening of the jetty entrance, and throwing open of a large space in a semi-circular form, with carriage-ways and footpaths; the improvement of the Chapel denes, waste grounds, rope walks, and quay; sanitary improvement of the town, &c. A subscription list for publication is in course of formation in aid of the funds of the association, of which Mr. A. Gourlay is the treasurer.

Miscellanea.

NORWICH CATHEDRAL.—Various alterations and improvements have been made, and are still going on, in this cathedral, according to the local papers. The choir galleries have been removed, and about two-thirds of either transept thrown into the choir, and separated by screens. The floor of the choir had been lowered about 18 inches to its original level, which allows the carved work of the benches to be seen, forming a rise of two steps eastward of the tower. The open archways from the aisles to the transepts have been filled in with stone screens of a perpendicular character—the panels filled with plate glass. In the south aisle a small Norman arch recessed is to be filled with stained glass, by Wailes, of Newcastle-on-Tyne, as a memorial window. Two new stained windows have been recently inserted, one in the north aisle, in memory of the late Professor Smyth, by Warrington, of London; the other in the south aisle, in memory of a Mr. and Mrs. Hale, by Wailes. It is hoped that several other windows in this cathedral will be similarly filled with stained glass, which are now blocked up with masonry. St. Luke's Chapel has been restored to its original Norman character. The north aisle, next the Bishop's garden, has been renovated similarly to St. Luke's Chapel. The architect who has had the management and superintendence of all these improvements is Mr. John Brown, of Norwich.

EASTCHEAP.—Just now the neighbourhood of Eastcheap furnishes plenty of matter for remark. The end of St. Mary-at-Hill Church having been laid bare, presents some stone ornaments very different from the rest of the church, which at some time or other has been stuccoed over stone. A little way further down Love-lane, on the right-hand side, is an old mansion, built by Sir Christopher Wren, which has just been purchased for the Ward School. One room on the ground floor is covered with curious old panel paintings. The church of St. George, Botolph-lane, ought to be visited at the same time. It has just been discovered that within a foot of the flooring of the church are numbers of bodies and remains, and something is about to be done. In the vault is to be seen a mummy, or rather the body of a woman, (so it is said) quite brown and hard, which is put in a sort of box upright—*pro bono* pew-opener.—A NEIGHBOUR.

CONDITION OF THE WORKING CLASSES.—In the House of Commons, on 11th inst. Mr. Slaney moved,—"That it is expedient that a department standing committee, or unpaid commission, be appointed to consider, suggest, and report from time to time preventive and remedial measures to benefit the social condition of the working classes, and for removing social and other obstacles to their improvement." He entered at some length into the subject, at first in the face of a little impatience on the part of members present; and after various speakers had addressed the House for and against the appointment of such a commission as that proposed, of which Mr. Walpole, on the part of the Government, disapproved, the motion was negatived without a division.

CONTEMPLATED DESTRUCTION OF OLD VERULAM.—In reply to the notice in our pages of Mr. C. R. Smith's remarks on this subject, the 'National Freehold Land Society,' who have purchased the site, state in their *Circular* that "the only part of the allusion that applies is, that the land has been purchased for the members; but as the tenancy of the present occupier will not expire until more than twelve months hence, we think we may safely assert that the land has not been 'marked out for excavations for houses,' at least not by us; and as to the contemplated destruction of the ruins which the writer so pathetically deplores, we can only say that we have not contemplated anything of the sort, for the best of all possible reasons, namely, that until we have possession we have no power to touch them." We cannot say much for the logic of the reply, but have reason to believe it augurs a good intention.

SYDNEY DWELLING-HOUSES.—The stranger is much struck by the handsome appearance given by the profuse use of cedar in the fittings of the Sydney dwellings. It has all the beauty in colour and figure of the Spanish mahogany: indeed, the experience of an upholsterer is necessary to detect the difference by sight alone. In solidity and closeness of grain, the Australian cedar is, however, greatly inferior to mahogany. The doors, sashes, window-frames and shutters, staircases and balustrades, skirtboards and cornices, and, in a few instances, the floors and ceilings are of cedar. Even the housemaids' closets have all the exterior appearance of polished mahogany doors. This profusion of dark-coloured, unpainted wood in the fitments of a house pleased my eye exceedingly; but my taste was disputed by many, some going so far as to state that it made a dwelling-house look like a gin-palace!—*Mundy's "Our Antipodes."*

ROMAN BATH AND PAVEMENT AT LYME.—An ancient Roman bath and a tesselated pavement have been opened out in an enclosure with old stone walls and earth, called, from time immemorial, the churchyard, and situate at Holcombe Farm, in Uplyme parish, Lyme Regis. The pavement was first discovered about two years ago, but was covered up again till lately. The enclosure is about 300 feet long by 42 feet broad, and is said to contain a great quantity of old building materials. Some hundreds of loads of worked stone were many years since taken out of this enclosure for drainage purposes.

THE ROYAL EXCHANGE, LONDON.—The liberties that are being taken with the façade of the City Exchange in connection with the "improvement" of the shops with which it is associated, still form the subject of urgent protests on the part of our correspondents. We regret to think that the letter we published some weeks since has not as yet put a stop to these proceedings, and it is of little use, we fear, printing the communications of "Civis" and others to a similar effect, still forwarded to us on this subject.

THE THAMES TUNNEL.—A project is on foot to complete the approaches to the Thames Tunnel on both sides of the river. A very large traffic is constantly going on between the Surrey side of the Thames and Wapping, Limehouse, Poplar, &c. all of which has now to be conveyed an unnecessary circuit of nearly six miles. London-bridge would be relieved of a great portion of this traffic by the opening of such a communication, which would also give to Southwark and its outlying districts a short and easy access to and from the East and West India Dock Railway terminus, and thence to the whole net-work of railways north of the Thames.

A CARBONIC-ACID GAS ENGINE.—Years since we pointed attention to a piece of common marble as a hopeful source of useful power in place of steam, where fuel was scarce but sulphuric or other acid abundant. In marble—a carbonate of lime,—or in carbonate of soda, we have an abundance of "fixed air," as carbonic acid gas was once called,—air fixed, but easily set free,—a sort of bottled wind,—wherewith cylinders might be filled, and machinery worked. The idea has been latterly realized, we know not with what success, by a Mr. J. F. Lackerstein, who has patented certain apparatus for obtaining power by the use of carbonic acid gas, generated, as he prefers, from carbonate of soda, in solution, by means of sulphuric acid, but also from other carbonates, such as that of lime, and by means of other acids besides the sulphuric. The products are in many cases so valuable as to greatly economise the working power. The operation of the acids on the apparatus is of course guarded against, in this case, by protection with platinum or gold. Enamelled iron, such as acid conserves are made in for household use, would be cheaper than either gold or platinum.

CAMBRIDGE ASYLUM FOR SOLDIERS' WIDOWS.—The first stone of this building was laid on Tuesday, the 15th, in Norbiton Park, Kingston, Surrey, by H. R. H. Prince Albert. The design, which we have already noticed, is by Mr. Thomas Allom. Messrs. Locke and Nesham are the contractors.

THAMES EMBANKMENT.—The Bill, as amended by the select committee, to enable the Commissioners of Works to make an embankment from Vauxhall to Chelsea-gardens, has just been printed. A clause has been added, that the Act is not to affect agreements already entered into between the Commissioners of Woods and Forests and other parties.

ST. BRIDE'S, FLEET-STREET.—The interior of this church is about to be repaired, painted, marbled, and gilded, under direction of Mr. John Shaw. The tenders were,—Clarke and Barnes, 669*l.*; George Cooke, 644*l.*; Robert Cooke, 549*l.*

METROPOLITAN SEWERS COMMISSION.—Mr. Richard Jebb, of Old-square, Lincoln's-inn, has been appointed by the Lord Chancellor as chairman of the commission.

METROPOLITAN CATTLE MARKET.—It is now definitively settled that the market will be established in Copenhagen-fields; the Corporation having purchased land for that purpose.

TENDERS

For new church, Thornhill-square, Islington: Messrs. Newman and Johnson, architects.

Beckensell (Abingdon)	£6,950	0	0
Myers	6,500	0	0
Carter and Ellis (Islington)	5,989	0	0
Jay	5,717	0	0
Dove (Islington, accepted)	5,600	0	0

Quantities not furnished.

For building four dwelling-houses and a warehouse at Whitechapel. Mr. William Dobson, architect.

King	£2,198	0	0
Starkie	1,959	10	0
Parke	1,957	0	0
Hill	1,945	0	0
Webb	1,945	0	0
Perry	1,935	0	0
Haynes	1,887	0	0
Brake	1,812	0	0
Case and Higgs	1,677	0	0
Livermore	1,649	0	0

For restoration and additions to Trinity Hall, Cambridge. Mr. Anthony Salvin, architect.

Peck	£6,400	0	0
Quinsee and Attack (Cambridge)	5,380	0	0
Bell (Cambridge)	5,353	0	0
Smith and Appleford	5,150	0	0
Lawrence and Son	5,086	0	0
Myers	4,990	0	0
Holland	4,967	0	0
Lucas, Brothers	4,950	0	0
Kelk	4,885	0	0

For the erection of the new church at Bitterne. Mr. Guillaume, architect.

King and Vere	£3,484	10	0
Chapman	3,260	0	0
Haines	3,170	0	0
Langdon	2,998	0	0
Brown (Southampton)	2,986	0	0
Brown (Winchester)	2,985	0	0
Fry	2,936	0	0
Gambling	2,850	0	0

For a house at the Sugar Refinery, Plymouth. Quantities furnished. Mr. W. Damant, architect.

Stitson	£1,066	18	6
Rovey and Matcham	1,060	0	0
Westlake	990	0	0
Roberts and Co.	970	0	0
T. Marshall	964	5	0
C. Dwelley	960	0	0
J. Marshall (accepted)	895	0	0

For additions and alterations to *Morning Advertiser* office. Mr. Stevens, architect.

Perkins	£2,670	0	0
Mills	2,590	0	0
Weston	2,510	0	0
Gammon	2,287	0	0
Jay	2,135	0	0
Cooper	2,128	0	0
Locke and Nesham	2,045	0	0
Chesterman	1,988	0	0
Rudkin	1,975	0	0
Norris	1,893	0	0
Bensby	1,771	0	0

For work at Bethlem Hospital. Mr. Sydney Smirke, architect.

Holland, H. and R.	£4,974	0	0
Willson	4,817	0	0
Baker and Son	4,632	0	0
Grimsdell	4,595	0	0
Haward and Nixon	4,497	0	0
Pritchard	4,472	0	0
Lee and Son	4,445	0	0
Todd	4,428	0	0
Piper, T. and W.	4,370	0	0
Locke and Nesham	4,330	0	0
Lucas	4,282	0	0
Jay	4,261	0	0
Myers	3,863	0	0

For works at the London Orphan Asylum. Mr. Ashpitel, architect.

Holland, H. and R.	£3,089	0	0
Barber	3,084	0	0
Myers	2,994	0	0
Jay	2,761	0	0
Coleman	2,588	0	0
Piper, T. and W.	2,583	0	0
Norris (accepted)	2,480	0	0

TO CORRESPONDENTS.

"*Tar.*"—Can any of your correspondents inform me what I can introduce into some Stockholm tar for the purpose of making it dry, hard, and quick?

"*Theory of the Tides.*"—Several correspondents have addressed us on this matter, simply assenting to or dissenting from the views to which we recently gave insertion. The inquiry would not be advanced by printing their communications.

"Clericus" (the arrangement proposed for heating churches would *not* be satisfactory. Amongst other objections the air admitted would be *burnt* instead of warmed), "W. H. C.," "G. W. B.," "J. H." (under our mark), "M. C." (do), "Grono," "Vindex," (the "College" in question has expired), "J. T. W.," "One of Mr. Baker's Hodmen," "S. H.," "C. C. N.," "W. P." (declined with thanks), "C. J. R." (was made aware of the proceeding), "F. S.," "T. P.," "J. A. F.," "Rural Rambler" (the minister may have some good reason, of which we are not aware, for not allowing tiles to be laid down at King's Norton church), "Young Antiquary" (the signature of the minister of his parish, or any known inhabitant, will obtain him a card to read at the British Museum, or the Head of the firm from which he dates his letter), "M. and H." (will appear), "Q. E. D." (ditto), "Footpad," "F. H. M.," "E. T.," "G. T. R.," "W. A." (we have the published report), "W. H." (we shall be glad to have block).

"*Books and Addresses.*"—We have not time to point out books or find addresses.

NOTICE.—All communications respecting *advertisements* should be addressed to the "Publisher," and not to the "Editor:" all other communications should be addressed to the EDITOR, and *not* to the Publisher.

ADVERTISEMENTS.

A STEADY PARTNER WANTED, to join the Advertiser's son, who can succeed a Civil Engineer, with whom he has been engaged several years. An intelligent young man may soon be instructed. About 500*l.* capital required.—Apply, by letter, to P. C. at the Office of "The Builder," 1, York-street, Covent Garden.

TO BUILDERS, TIMBER MERCHANTS, QUARRYMEN, AND RAILWAY CARRIAGE BUILDERS.

PARTNER WANTED, by John Wilson, of Grantham, in the county of Lincoln.—In consequence of the declining health of Mr. Neale (Mr. Wilson's late partner), an opportunity now presents itself to a gentleman who can undertake to manage a proportion of either of the above branches, and such gentleman having from 2,000*l.* to 3,000*l.* to invest either immediately, or in a few months, will be admitted to all the connection possessed by the advertiser, of sixteen years' standing. For building purposes, the workshops are exceedingly well arranged, and very extensive, principally on the ground floor. For the timber trade, the yard is capable of doing any amount of business, with excellent cranes, and every convenience, close to the saw-mills, which mills in all are sixty-horse power. A branch from the Ambergate Railway runs through the yard and workshops, which line will, in a few weeks, be intersected by the Great Northern Railway.

ANCASTER STONE QUARRIES.—These quarries are in the occupation of the Advertiser, and will form a portion of the partnership.

The railway carriage building department is complete with all kinds of machinery, such as lathes, drilling, screwing, punching, and planing machines, with fitting shops and smithy, containing twelve forges.

The above affords a favourable opportunity for the investment of capital, with every prospect of a large return.—For further particulars apply to Messrs. NEALE and WILSON'S Offices, Grantham.

SHOP FOREMAN WANTED, capable of superintending about forty men.—Apply by letter, pre-paid, to A. B. 62, St. Martin's-le-Grand.

FIRE-CLAY GAS RETORTS.—WANTED, immediately, ONE or TWO GOOD HANDS accustomed to the manufacture of fire-clay retorts.—Address, F. C. Post-office, Leeds.

WANTED, a few good BENCH JOINERS, at Country Wages.—Apply to F. CUSLING, Elmham, Norfolk.

TO CARPENTERS AND JOINERS.

WANTED, Eight or Ten GOOD HANDS.—Apply to ROBERT GRIFFITHS, Builder, Quatford, near Bridgenorth.

WANTED, a FOREMAN, who thoroughly understands the whole routine of a Saw-mill.—Apply at Caledonian Mill, New Wharf-road, Caledonian-road.

WANTED, a BUILDER'S CLERK, fully conversant with the duties of the office.—Apply, stating salary required, full particulars of last engagement, &c. to S. O. Y. Office of "The Builder," 1, York-street, Covent-garden.

WANTED, in the Country, a GENERAL BUILDER'S CLERK and BOOK-KEEPER. He must understand measuring all kinds of works, and taking out quantities, &c. State age and salary.—Address, 88, Cheapside.

WANTED, by an Architect in the north of England, a good DRAUGHTSMAN and GENERAL ACCOUNTANT. One who has been brought up in a builder or surveyor's office would be preferred.—Address, A. B. Post-office, Sunderland.

TO PLUMBERS.

WANTED, a steady, active MAN, as Three-branch Hand. It is essential he should be a good Plumber and of good character. A suitable man, willing to make himself useful, would have constant employment at good wages.—Apply at 81, Broad-street, Golden-square.

WANTED, a SITUATION as CASHIER, TIME-KEEPER, or CLERK, by a person thoroughly experienced in contractors' accounts; he has been accustomed to measuring, and is fully competent to the superintendence of works, &c. &c. Testimonials from and references to eminent contractors with whom he has been.—Address, D. D. Railway Coffee-house, 75, Seymour-street, Euston-square, London.

TO BUILDERS' FOREMEN.

WANTED, an active WORKING FOREMAN, in a Joiner's Shop, fifty miles from London. A person not beyond middle age would be preferred.

WANTED, also, an OUT-OF-DOOR GENERAL FOREMAN, competent to superintend the several branches of the building business.—Addresses, post paid, stating particulars, references, where last employed, and when at liberty, to J. P. 35, Cranbourn-street, Leicester-square.

TO BUILDERS.

AN active experienced FOREMAN is in want of a SITUATION as WALKING or SHOP FOREMAN, being accustomed to both duties. He can be well recommended.—Direct, A. B. 81, Lower Marsh, Lambeth.

VACANCY for a CHECK CLERK, in a factory. The duties are to keep time and accounts, also to ring the workmen in and out. It is necessary to have a person of very regular habits, ability, and nerve, to keep a large number of workmen in order in the absence of the foreman. A middle-aged man, from the country preferred, without a large family, as he will have to reside on the premises.—Apply by letter, stating age and last employment, to T. K. Office of "The Builder," 1, York-street Covent Garden.

TO CARPENTERS, JOINERS, AND OTHERS.

WANTED, by a respectable Young Man in the country, a SITUATION, in a good shop, as IMPROVER; in or near London preferred.—Please address A. B. C. to be left at Wroughton Post-office, near Swindon, Wilts.

TO PLUMBERS, PAINTERS, AND GLAZIERS.

WANTED, by a Young Man, EMPLOYMENT as PLUMBER. No objection to fill up his time with Painting and Glazing in town or country.—Address, A. B. Office of "The Builder," 1, York-street, Covent Garden.

TO PAINTERS, BUILDERS, &c.

WANTED, by a Young Man, a SITUATION as WRITER and GRAINER. He thoroughly understands House Painting, and has no objection to fill up his time. Specimens may be seen.—Address H. P. 21, Caledonia-street, Kings-cross.

WANTED, by a Young Man, in his 31st year, a SITUATION in a BUILDER'S OFFICE, or on the Works. He is practically acquainted with building, and has had some experience in a Surveyor's Office.—Address, pre-paid, W. R. S. 13, Essex-street, Islington.

TO BUILDERS AND OTHERS.

WANTED, by a Married Man, aged 38 years, a PERMANENT EMPLOY; he understands painting, paperhanging, and jobbing carpentering, brickwork, &c. Can look after a horse and cart. No objection to the country. Can be strongly recommended.—Address, J. H. WELD, House Mall, Kensington Gravel-pits.

TO CONTRACTORS, BUILDERS, AND OTHERS.

THE Advertiser, a Young Married Man, for several years engaged on public works, as Clerk, Timekeeper, or Gauger, wishes a PERMANENT ENGAGEMENT at home or abroad. Can take out quantities, measure work, and survey.—Address, H. M. Mr. Bayley's, Stationer, Ironmonger-street, Stamford, Rutland.

TO PLUMBERS, BUILDERS, &c.

A YOUNG MAN, aged 27, a first-rate Plumber, and who also understands and has been used to Painting and Glazing, both common and good work, desires an ENGAGEMENT, either in Town or Country. He has undeniable references as to strictness and punctuality, and would be found deserving any appointment of trust.—Address W. R. 24, Hereford-street, Lisson-grove, London.

ARCHITECTS and BUILDERS are invited to inspect Messrs. BOWER and CO.'s PATENT ARCHITECTURAL ORNATURE, by which an immense saving is effected both in time and expense. Price of the 11lustrated Tariff, 1s.; post free, 1s. 8d. Patterns to be seen at 2, a, Hatton-garden. The Prize Medal was awarded to Messrs. B. and Co. for this invention.

OLD MANSIONS and BUILDINGS of every description PURCHASED to pull down, for immediate cash.—Mr. C. F. SMYRK, late of Kensington Lane, begs to announce that he is, at all times, a purchaser of property of the above description to any amount, no objection to distance, if convenient to the rail or water carriage, provided the purchase is of sufficient magnitude.—Apply to Mr. C. F. SMYRK, Auctioneer and Valuer, Mina Road, Old Kent Road.

TO CAPITALISTS AND BUILDERS.

BOURNEMOUTH, near Christchurch and Poole.—After much deliberation, it has been determined to erect a Sanatorium at Bournemouth, in connection with the Hospital for Consumption and Diseases of the Chest, established at Brompton. The extraordinary salubrity of Bournemouth has been long acknowledged by Sir James Clarke, Dr. Granville, and other eminent physicians, and most abundantly proved by the successful results which have attended a sojourn in that most healthful vale. There has long been a demand for houses, as well for residents as for visitors, but there has not been any adequate supply of sites suitable for building purposes until the present time. The proprietors of the Branksome Estate, which comprises both sides of the Bourne Valley to the extent of more than two miles in length, are now prepared to OFFER to the public most eligible SITES for BUILDING, either immediately contiguous to the very spot selected for the Sanatorium, or in its neighbourhood, or at a greater distance from it, as may be preferred. Roads have been formed, and various other important improvements have been made, and one now in progress, for bringing into notice the capabilities of this lovely locality, which for all purposes of health or enjoyment is not to be surpassed in England.—For further information apply to Messrs. WINTER, WILLIAMS, and Co, Solicitors, 16, Bedford-row, London; or 1, Richmond-terrace, Bournemouth, near Poole.

TO ARCHITECTS.

AN ARCHITECT in London is willing to DISPOSE of his PRACTICE, having been engaged for some years on various public and private works. This would be a desirable opportunity for any one about to enter the profession.—Apply by letter to F. S. G. Office of "The Builder," 1, York-street, Covent-garden.

BARBICAN FOUNDRY, PLYMOUTH, with DWELLING-HOUSE, &c. TO BE LET, with immediate Possession.—The Steam Engine, Plant, Patterns, Lathes, Proving Machines, Fla-ks, Tools, &c. will be Let with the Foundry, or may be taken at a Valuation. The Premises are extensive, and adjoining Southside Quay, in Sutton Harbour. The Engine and Plant are in good order, and can be immediately set to work.—Apply to Mr. BAILY, Solicitor, Plymouth.

DESIRABLE WHARF TO LET, on the Regents Canal, at Battle Bridge.—TO BE LET, on lease for a term of Sixty-Five years, a very convenient WHARF, with Dwelling House, and offices suitable for the Stone, Timber, or Coal Trades, or the erection of a Factory of any description. The depth is about 130 feet, with water frontage on two sides, 230 ft. in length, and very convenient approaches.—For further particulars, apply at 39, Gray's Inn-lane.

TO LET, a BRICK FIELD, with immediate possession, on the line of the Great Western Railway, near Maidenhead Station. The field is in full work, with every preparation for making 1,800,000 stock and washed bricks. The clay is of very superior quality, is 10 feet deep, 6 feet of which is malm earth. The bricks made in this field last season were much approved of in the London market.—Apply to Mr. J. WETHERED, Maidenhead, Berks.

TO PAPER MAKERS.

TO BE SOLD BY PRIVATE CONTRACT, the VALUABLE MACHINERY of the IPSWICH PAPER MILLS, which have been erected without regard to expense by the late proprietors within the last three years, for making fine papers.

The machinery consists chiefly of—

A powerful high-pressure and condensing steam-engine (Sims's patent) of 40-horse power, with Hall's patent condenser, and two steam boilers.

A 16-horse power condensing engine, by Boulton and Watt, with Hall's patent condenser and boiler.

A 8-horse power high-pressure table engine, recently erected to drive the two paper machines.

Eight beating engines and rag washers, by Piper and others.

One paper machine (with cast-iron stuff vat, agitator, and gearwork, 12 feet diameter), fitted with 1st, 2nd, and 3rd press rolls, air pumps, vacuum boxes, drying cylinders, calendars, &c. &c. for 60-inch paper, and driving gearing complete.

One ditto as ditto, for 48-inch paper.

One of Ransom's patent sizing machines for 48-inch paper, with driving gear complete.

Two of Ransom's patent drying machines, for 60-inch paper, with driving gear complete.

Two excellent 60-inch cutting machines.

Four sets of glazing rolls, fitted driving apparatus, tables, &c. complete.

One double powerful hydraulic press and pumps, used for paper

One hydraulic press and pump, used for half-stuff.

Three bleach preparing vats, with agitators and gear-work.

One stone bleaching engine, and twenty bleaching stone vats, &c.

Further particulars may be obtained upon application to GEORGE HURWOOD, C.E. Ipswich.

TO GLASS MERCHANTS AND BUILDERS.

THOMAS ENGELBACK, Glass Bender, No. 10, Thrawl-street, Brick-lane, Spitalfields, begs to inform them that he has built a very large Furnace for Bending Glass, and can undertake to bend any size glass up to 12 feet long, by 7 feet wide, at low prices.

STEPHENS'S ORIGINAL DYES, for STAINING COMMON DEAL to imitate OAK, MAHOGANY, or SATINWOOD colours. For specimens of the effects of these Dyes, the public are referred to the WOODWORK of the GREAT EXHIBITION, and particularly the ENTRANCE DOORS, which were coloured with the stains invented and manufactured by HENRY STEPHENS, of 54, Stamford-street, Blackfriars-road, who supplied to the workmen both stain and varnish, and who was the first person to introduce and call the attention of the public to this means of colouring wood, so as to bring forth the ornamental effect of the natural grain, and thus save the expense of artificial imitation.—Prepared and sold by HENRY STEPHENS, 54, Stamford-street, Blackfriars-road.

WANTED, to PURCHASE, a new STEAM-ENGINE, of two or three-horse power, upon the most simple construction, and in the most complete form, high pressure; price required for cash, with and without the boiler and therewith particulars of dimensions and weight of both.—Address, post paid, to A. B. the Chapter Coffee-house, St. Paul's, London.

STEAM-ENGINES of every description, Corn and Flour Mills, Paper Machines, Rag Machines, Saw Mills, Sugar Mills, Water-wheels, Girders, and all other sorts of Iron Castings, manufactured by ROBERT DOUGLAS, Strathedeen Works, Cupar Fife.—JAMES MELROSE, Agent, 78, Hatton-garden.

STEAM-ENGINE BOILERS of every description, Wrought-iron Girders, Gasometers, Ship Tanks, Sugar and Salt Pans, Canal Boats, Cisterns, and General Wrought-iron-work, manufactured by MELROSE and COWLEY, Bradley Works, near Bilston, Staffordshire.—Office in London, 78, Hatton-garden.

QUARTZ-CRUSHING and GOLD-WASHING MACHINERY.—ATLAS WORKS COMPANY, Emerson-street, near Southwark-bridge, Engineers, Millwrights, and Coppersmiths.—Engines and machines made on the most improved principles; repairs promptly executed: contracts entered into for large or small orders. To be seen at the works, Gwynne's Patent Amalgamator and Pulveriser, for the grinding, washing, and separating of gold, quartz, &c. All communications addressed to THOMAS ELLIS, Secretary, either at the City Office, 4, Dowgate-hill, or the works, Emerson-street, near Southwark-bridge.

TO CABINET MAKERS, BUILDERS, &c.

COULSON'S REGISTERED MORTISING MACHINE.—This machine is of a very superior make, being entirely built of wrought iron and cast metals; is fitted-up with six chisels, will mortise hard wood as well as soft, and works by a hand-lever, not by a foot-spring. For ease in working, correctness, and durability, it by far surpasses any other.—For particulars, &c. apply to WILLIAM COULSON, No. 36, Fetter-lane, York. Cash price, 10l. 10s.—N.B. Parties can also be furnished with cutters to the above machine for tenoning, if required.

COLLINGE'S PATENT HINGES.—Sole Manufacturers, CHARLES COLLINGE and CO., 64 and 65, Bridge-road, Lambeth, where a great variety are always on view for church, park, railroad, coachhouse, and other gates and doors of large and small dimensions, a gate of a ton weight moving with these hinges as easily as a wicket. Ornamental hinges, adapted for drawing-rooms, &c.; doors fitted with them may be removed and replaced in an instant. Rising and double-acting spring hinges, and superior gate fastenings, at moderate prices. None genuine unless marked "Charles Collinge, Patent, Lambeth." Plain and ornamental cast and wrought iron work, for building and other purposes. Engines, machinery, patent axletrees, sugar-mills, &c.

FOUNDRY AND IRON WORKS,

68, DRURY-LANE, and CHARLES-STREET, DRURY-LANE.

GLOVER, BROS.,

Solicit the attention of the Trade to their extensive Stock of PATTERNS for CASTINGS of EVERY DESCRIPTION, either structural or ornamental.

Patterns of Girders, Columns, Balconies, Railing, Ornamental Carriage and Park Gates, Lamp and Street Posts, Tanks, Pipes, Wheels, Pinions, Lathes, and Steam-engines; Range and Hot-plate Metal. An improved Soot Door adapted for internal work.

A large stock of Rain-water Pipes, Plain and O G Gutters, Air-bricks, Sash Weights, Air-tight Sewer Grates, Stable Fittings, Hurdles, &c.

Plain and Ornamental Vases 20 per cent. cheaper than Terra-cotta.

Estimates given for Iron Buildings, Wrought-iron Roofing, Greenhouses, Staircases, Wrought-iron Girders, Fireproof Doors, Book-safes and Strong Rooms, Tanks and Boilers, and every description of ironwork to specification, and the work executed with every attention to quality and despatch.

GLOVERS' IRONWORKS,
168, DRURY-LANE, and CHARLES-STREET.

A SAVING of TIME and MATERIALS, with solidity of building.

NATHAN GOUGH'S PATENT PORTABLE STEAM-ENGINES of 2, 3, 4, and 6-horse power, for grinding mortar, raising building materials, driving piles, circular saws, pumps, &c., 46, Albert-street, Manchester.

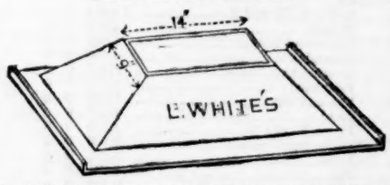
TESTIMONIAL
from Charles Barry, Esq.:—
2, Great George-street, Westminster,
London, Oct. 27, 1849.

Mr. Nathan Gough,

Sir,—I have, for Mr. Barry, the pleasure of replying to your request of the 4th inst., for a testimonial of the working of three steam-engines you have supplied to the New Houses of Parliament at Westminster, by saying that they have fully answered the purposes for which they were required, viz., hoisting the building materials; and two of the three have been at work for some years, with very little repairs, and with considerable economy of fuel.—I am, Sir, your obedient servant,

Per pro CHARLES BARRY,
ALFRED MEESON.

IMPORTANT TO BUILDERS.



REGISTERED CAST-IRON CHIMNEY-HOPPER and CHIMNEY BAR COMBINED, ensuring a perfect formation of the Flue, and rendering smoky chimneys impossible. One trial will cause their adoption in every building.

Price from 8s. 6d. each, according to size.

CAST-IRON KITCHEN SINKS, with overflow and cleansing pipe, at 8s. 6d. each.

RAIN-WATER PIPE and EAVE GUTTERS, at wholesale prices. Also, O. G. gutters, sash weights, STABLE FITTINGS, pumps, tomb railing, cattle and pig troughs, and COLUMNS with caps and bases, and every kind of builders' castings, in stock, at LYNCH WHITE'S Iron Wharf, Upper Ground-street, London, near Blackfriars-bridge.

TO GAS COMPANIES AND OTHERS.

PARTIES having any SECOND-HAND GAS APPARATUS to DISPOSE OF are requested to forward particulars of same, stating the size, weight, and price to JOSIAH F. FAIRBANK, Gas Engineer, Scarborough.
Scarborough Gas Works, June 15, 1852.

DAMP WALLS.—NEW PATENT PAINT, as used at the TOWER, by order of HER MAJESTY'S HONOURABLE BOARD OF ORDNANCE; at the TUNNEL; ZOOLOGICAL GARDENS, Regent's-park, and various other public and private buildings; in quantities to finish twenty square yards for 10s.

PATENT LIQUID CEMENT for the fronts of houses, for beauty pre-eminent, giving the appearance of fine cut stone, and only one-eighth the cost of Oil Paint. In casks of 1, 2, and 3 cwt. at 8s. 15s. and 21s. each.

PATENT MINERAL ZINC PAINTS, invaluable for cheapness, beauty, and permanence, ready for use. White Stone and Lead, 5s; Greens and Blues, 6s. per gallon.

BLACK MINERAL PAINT, very permanent, half the usual price: only 3s. per gallon.

NEW PATENT COLOUR for inside work, may be applied on Wood, Stucco, Cement, or over Oil Paint. No smell, and will dry in an hour. In casks of 1 cwt. at 14s.

G. BELL and CO. Steam Mills, 2, Wellington-street, Gaswell-street, Cubitt-town.

WHITE, or OXIDE of ZINC.—LANGSTON, SCOTT, and WHITE, Patentees and sole Manufacturers in the United Kingdom, can now furnish SHIPPERS and the TRADE with a large and regular supply of WHITE ZINC, for paint, enamelling, paper staining, glass, gutta percha, floor-cloth, &c. &c. of uniform quality and colour, and superior body.

Monthly contracts made, and sample casks of not less than 1 to 2 cwt. forwarded (warranted pure) from their works,
Grand Surrey Canal Dock, Rotherhithe, London.

HUBBUCK'S PATENT WHITE ZINC PAINT.—The PERMANENT WHITE of the Ancients, by its costliness hitherto restricted to the use of the artist, is now offered at the price of the ordinary white lead.

Four years since the proprietors placed their manufacture on a large scale, and put this elegant Paint in competition with White Lead.

Its confessed superiority over every other paint hitherto known brought forward various imitations.

These inferior productions, frequently made from zinc ores, containing lead, arsenic, and other deleterious material, alike injurious to health, deficient in body, and reducing the preservative properties for which the original paint stands pre-eminent.

In justice to the proprietors these should not be confounded with the original, even though sold under the pretence that it is all the same.

HUBBUCK'S paint is entirely free from any injurious properties whatever; it is healthful in the manufacture, healthful in use, and healthful to occupants of rooms newly painted with it.

As a guard to the painter against the substitution of the inferior paints, each cask is stamped

"HUBBUCK, LONDON, PATENT"

and if the cask has not been so marked, the reason is obvious.

The powdered White Zinc also may be had for grinding in oil; also for use for porcelain cards, for japanners, for gutta percha, and for plaster decorations, and the other purposes where it is used with size, gum, varnish, spirit, &c. &c.

A circular with full particulars may be had of THOMAS HUBBUCK and SON, Colour Manufacturers, opposite the London Docks.

PURE PATENT WHITE ZINC PAINT, from the VIEILLE MONTAGNE ZINC MINING COMPANY of BELGIUM.—This PAINT is superior in every respect to white lead; it is unequalled in whiteness, and grows very hard after it is applied, and is, therefore, for interior work, susceptible of a high polish. Besides, it is entirely free from all poisonous influences, is unaffected by sea-water, sulphuretted hydrogen, or any gases, and preserves its original colour, which white lead does not do.

WHITE ZINC PAINT causes none of the ravages invariably committed by white lead upon the human frame; neither painter's colic, nor paralysis, &c. &c. to which dangerous complaints the workmen and manufacturers who use it are subject, and to which persons who inhabit newly-painted houses are also liable. Since its introduction into the United Kingdom by the patentee, the Admiralty and the most eminent professional men have given it their preference over any other paint. The public is cautioned, that if white zinc paint is adulterated, it becomes a very inferior paint, instead of a first-rate one, and peels or washes off on outside work.

The VIEILLE MONTAGNE ZINC COMPANY imports largely from its works in Belgium WHITE OXIDE of ZINC in a dry powder, and the casks bearing their mark, VM, are only to be considered as genuine, and may be obtained, for grinding in oil, at any of their Agents, residing in the following towns, viz.: London, Live pool, Birmingham, Hull, Newcastle, Leith, Glasgow, Bristol, Plymouth, Norwich, Ipswich, Dublin, Cork, Belfast, and Jersey.

The same oxides ground "pure" to a White Zinc Paint, may be also obtained from the Company's Agents of the above-mentioned localities, as likewise from their Grinding Agents, Messrs. C. DEVAUX and Co. 62, King William-street, City, London; and Messrs. ROBT. ANDERSON and Co. Timber Bush, Leith, Scotland. Pure White Zinc Paint may likewise be purchased from Messrs. BLUNDELL SPENCE and Co. Hull.

For further particulars apply to Mr. H. F. SCHMOLL, General Agent for the United Kingdom, at the Company's offices, 15, Manchester-buildings, Westminster-bridge, London.

THE WASHINGTON CHEMICAL COMPANY,
NEWCASTLE-ON-TYNE;
Manufacturers of

PATTINSON'S OXICHLORIDE of LEAD.—The Washington Chemical Company having, during the last year, established a Manufactory of Pattinson's Oxichloride of Lead on a large scale, and being able to supply it with regularity, and to execute orders without delay, now proceed to bring this new and valuable preparation of Lead before their friends and the public, quite sure that it will not, in the present age, be condemned because it is new, and that if judged by its merits, it must make its way, and finally take its place as one of the important manufactures of this country.

Pattinson's Oxichloride of Lead is a chemical combination of one equivalent of Chloride of Lead, and one equivalent of Oxide of Lead; it being well known that common White Lead is a chemical combination of one equivalent of Oxide of Lead, and one equivalent of (or thereabouts) of Carbonic Acid, constituting what is called in chemical language, Carbonate of Lead. Now there is no reason to conclude that Carbonate of Lead is the only compound of lead valuable as a paint, and still less that it should be the best compound of lead for that purpose. In point of fact it is not so, for the newly-discovered Oxichloride in most, if not in all respects, is far superior; its colour is brilliantly white, and in a number of cases it has been tried against the best White Lead that could be obtained, and after a period of upwards of two years it has been found to retain its white colour, considerably better than the lead against which it was tried.

But the chief and by far the most important advantage it possesses is, its remarkable and very decided superiority of Body; by which term the power of covering surface well and extensively is understood among Painters. The attention of the discoverer was at a very early period drawn to this circumstance, and since that time the Washington Chemical Company have had abundant opportunities of placing its superiority in this important particular beyond all doubt. They have themselves performed a number of experiments, and have also caused a number of experiments to be performed, in the large way, by various practical men, to ascertain accurately its covering power as compared with the best White Lead, and they now state the proportions to be as 80 to 100, that is, 80 lbs. of Oxichloride Paint will cover as much surface as 100 lbs. of the best White Lead, the saving of cost being in the same proportion; besides this, the coating is thicker and more protective, both in and out of doors, as the Oxichloride dries into a hard, tenacious layer, more like an Enamel than paint.

In using the Oxichloride, no difference in the materials with which it is mixed is required. Oil and Turpentine being employed as usual both for work technically called Flatting, and for work intended to be varnished. For the use of Paper Stainers and Leather Dressers, the Oxichloride is found to be peculiarly suitable. The Washington Chemical Company strongly recommend this newly-discovered substance to the notice of consumers, both on account of its economy, and its intrinsic good qualities as a paint.

OFFICE IN LONDON.—Mr. R. COOKE, No. 7, Size-lane.
Office of the Washington Chemical Company,
73, Grey-street, Newcastle-on-Tyne, January 1, 1852.

GREAT EXHIBITION—CLASS XXII.

"CHUBB AND SON—FOR LOCKS, PRIZE MEDAL AND SPECIAL APPROBATION."

BY APPOINTMENTS,

MANUFACTURERS TO THE QUEEN AND H.R.H. PRINCE ALBERT.

It will be noticed that but one other Lock-maker in the United Kingdom, out of the immense number of Exhibitors in this department, has received the award of "Special Approbation." The undoubted character of CHUBB'S Locks for simplicity, durability, and safety, against all surreptitious attempts by thieves to pick or open them, has thus been recognised and rewarded. These Locks have now been used for more than thirty years by Bankers, the Governments of this and other Countries, and by many hundreds of thousands of individuals, and no instance has ever occurred of any robberies having taken place through these Locks having been picked or opened by false keys. The great care exercised in their manufacture, and the moderate prices at which they are sold, still cause them to maintain their pre-eminent position as the most secure Locks for general as well as special purposes.

CHUBB and SON have from time to time invented and applied such improvements in the manufacture of their Locks, so as to combine the greatest security with that simplicity which is essential to Locks used for ordinary purposes. They have lately added, besides other improvements, a Patented Invention of great simplicity, which will in future be applied without any additional cost.

CHUBB and SON have not been in the habit of publishing Testimonials of the practical worth and efficient security of their Locks and Fire-proof Safes, the universal approval by all purchasers having rendered this course unnecessary. They, however, think it proper to bring before the public the following Testimonials:—

Recent Attempt to rob the Dundee Bank frustrated by Chubb's Lock.

"Dundee Bank, Dundee, Feb. 6, 1852.

"GENTLEMEN,—I suppose it will be gratifying to you to receive the following testimonial of the security of your Locks. An attempt was made upon this Bank on the night of Saturday last by a set of thieves evidently quite accomplished in their profession. The part of our property which they selected for their operations was an iron door secured by one of your Locks, in attempting to pick which there can be no doubt all their ingenuity was at first expended, as the only alternative was the tedious and laborious one of boring into the Lock, in order to destroy it. Before this could be accomplished a sudden alarm made them take to flight; but the work done in boring, &c. could not have occupied less than four or five hours, plainly showing that they despaired of being able to open your Lock in that time. And as in their flight they left all their implements behind them, including a perfect set of lock-picking instruments, it is also seen that they were amply furnished for their work, had they believed it practicable.

"So far as the construction of your Locks is concerned, their safety seems very efficient; all that appears to be wanting is, that they should be enclosed on all sides in case-hardened steel, and their security would seem to be complete.

"I am, Gentlemen, yours obediently,

"Messrs. CHUBB and SON, "GEORGE C. BOASE, Cashier.

"57, St. Paul's Churchyard, London."

In the Bankers' Safes made by CHUBB and SON, the plan of covering the Locks with case-hardened steel plates is adopted, and has been so for some years.

On the morning of Monday, Feb. 9, 1852, the counting-house of Messrs. Arthur and Smith, Bridewell-street, Bristol, was found to have been burglariously entered during the previous day, and after forcing open several desks the thieves turned their attention to an iron Safe, the door of which was secured by CHUBB'S Lock. This they first unsuccessfully endeavoured to pick, and then tried to destroy it by drilling through the door, but were completely foiled. CHUBB and SON have received the following letter on the subject from Messrs. Arthur and Smith:—

"Bristol, 17th February, 1852.

"GENTLEMEN,—In reply to your favour of yesterday, we have to say that our repository was provided with one of your Locks, upon which, no doubt, the thieves first tried their ingenuity in attempting to pick it, but failing in this, they had recourse to drilling. "We are, gentlemen, yours respectfully,

"Messrs. CHUBB and SON, "ARTHUR and SMITH.
57, St. Paul's-churchyard, London."

"Messrs. CHUBB and SON, "83, Limekiln-lane, Liverpool.

"GENTLEMEN,—On Thursday last our shop was, for the third time within the last two months, attempted to be entered by thieves, which attempts, owing to your lock being on the door, we are happy to say were frustrated. So determined were the parties to succeed, that considerable force must have been used, as the woodwork was torn away, as if by a crowbar. "We are, gentlemen, yours, &c.

"21st February, 1852." "A. and J. LAWSON and Co.

THE PRIZE MEDAL, WITH "SPECIAL APPROBATION,"

HAS BEEN AWARDED FOR

CHUBB'S FIRE-PROOF SAFES,

BY THE JURORS OF THE GREAT EXHIBITION.

CHUBB and SON have the pleasure to state that the only Fire-proof Safes in the United Kingdom which have received the award of "Special Approbation," were of their manufacture. The decision of the Jury, made after a full and careful consideration and comparison of the merits of the Safes exhibited, is therefore conclusive of the great superiority of CHUBB'S WROUGHT-IRON FIRE-PROOF SAFES, as being the strongest against the attacks of burglars, and giving the greatest security to Books, Deeds, and Papers, from fire.

Many thousands of these Safes have been supplied to Bankers, Merchants, and others, both at home and abroad; and in every case they have given efficient protection from fire and thieves. Many Safes which are sold as Fire-proof, are made of the thinnest plate iron, and must necessarily be crushed, and the contents destroyed, in case of timbers or brickwork falling upon them. CHUBB and SON'S Safes are made of double casings of strong wrought-iron, the intermediate spaces being filled with the best proved non-conducting substances; they are fastened strongly together with rivets, dovetails, and angle-iron, so that if the whole building in which they may be placed should fall, they would remain uninjured. The whole of them are fitted with CHUBB'S improved Detector Locks.

The Visitors at the Great Exhibition would not fail to notice the Koh-i-noor Safe and Cage, and the Safe containing the magnificent Jewels of A. J. B. Hope, esq. M.P. both of which were manufactured by CHUBB and SON. The Safe used by the Executive Committee for securing the 360,000*l.* taken as admission money, was also made by them.

A decided testimony in favour of the efficiency of CHUBB'S Safes to preserve Books and Papers from Fire, was borne by Mr. Braidwood, the Superintendent of the London Fire Brigade, at a meeting of the Institution of Civil Engineers in 1849, when the subject of "Fire-proof Buildings" was under discussion. Such an opinion, founded on the great experience of this gentleman, will speak for itself.

From an Article on the Great Exhibition in the "Illustrated London News," May 24th, 1851:—

"Various contrivances to protect books, papers, and valuable documents against the ravages of fire are exhibited in the Building. They resolve themselves into two classes—those which resist the action of fire from being non-conductors of heat, and those which give off a gaseous material. The best specimen which we have seen is manufactured by Mr. Chubb, of St. Paul's Churchyard. Its case contains such an extreme thickness of non-conducting matter, that we should not hesitate to trust any document with it, no matter how important, in any moderate fire."

As to the security of these Safes from the attacks of burglars, the following facts are submitted. From the "Stamford Mercury," Jan. 19, 1849:—

"BURGLARY.—On Friday night last, the offices of Mr. Wilkinson, solicitor, in Peterboro', were entered by thieves, who picked the lock of the door, and so obtained an entrance. The chief point seems to have been a large iron chest in Mr. W.'s office; this at the time contained a considerable amount in cash—notes, gold, and silver—which had been omitted to be paid into the bank during the day. The chest was one of Chubb's celebrated make; in this the burglars broke their picklocks, which were abstracted by means of a magnet the following morning. Having failed with the lock, they next tried to force open the lid; but here again they were foiled: the metal was too tough to break, and too solid to be wrenched or cut, and the thieves were baulked of their expected prize. Money appears to have been their object, as beyond the trifling damage done in opening the desks, &c. nothing was injured or taken away."

Extract of a Letter from F. W. GUNDRY, Esq. Bridport, dated April 16th' 1849, addressed to CHUBB and SON.

"I had my office broken into last night, and several locks smashed; one of your iron chests fortunately resisted the attempts of the robbers, although they tried hard."

Desperate Attempt to open CHUBB'S SAFE completely baffled.

"128, Cross-street, Manchester, Feb. 3, 1852.

"SIRS,—My premises have been entered twice by thieves in the course of the last two months, and an attempt made to open my safe, which is one of your make and has one of your Patent Locks upon it. I have the satisfaction to state to you that they did not succeed in either case in opening the same. The last attempt was made on the evening of Friday last, the 30th of January.

"I am yours obediently, "JOS. CLARKE.

"Messrs. CHUBB and SON, 57, St. Paul's Churchyard, London."

In the above instance the thieves had picked no less than eight Locks of the ordinary kind, and then tried the Safe Locks with such violence as to break one of their picks, a part of which was found in the Lock. Finding themselves thus foiled, they attempted to force open the Safe, but it resisted all their efforts.

STRONG-ROOM DOORS AND FRAMES, WROUGHT-IRON AND FIRE-PROOF,

OF ALL SIZES, KEPT ON SALE.

DETAILED PRICED LISTS OF SIZES OF ALL THE ABOVE ARTICLES WILL BE FORWARDED ON APPLICATION.

CHUBB AND SON, 57, ST. PAUL'S CHURCHYARD, LONDON;
28, LORD-STREET, LIVERPOOL;
16, MARKET-STREET, MANCHESTER; AND HORSELEY-FIELDS, WOLVERHAMPTON.

LOANS.—Persons desirous of obtaining ADVANCES from 50*l.* to 250*l.* upon approved personal security, repayable by easy instalments, extending over a lengthened period, are invited to examine the principles of the BRITISH MUTUAL SUBSCRIPTION LOAN ASSURANCE CLASSES. Prospectuses, reports, and every information may be obtained on application at the British Mutual Life Office, 17, New Bridge-street, Blackfriars. Rules 6*d.* each copy, or 1*s.* per post. Note.—Four new classes are now in course of formation for London, and will immediately commence operations.

MONEY ON LOAN, at 3*l.* per Cent. per Annum.—ARNEWAY'S CHARITY.—NOTICE IS HEREBY GIVEN, that the Trustees of this Charity are enabled to lend out the Trust Moneys to poor occupiers or traders resident within the City and Liberty of Westminster, that is to say, within the parishes of St. Margaret and St. John the Evangelist, St. Anne, Soho, St. Clement Danes, St. George, Hanover-square, St. James, St. Martin-in-the-Fields, St. Mary-le-Strand, and St. Paul, Covent Garden. The amount of each loan is not to exceed 100*l.* is to bear interest after the rate of 3*l.* per cent. per annum, and is to be secured by the bond of the borrower, with two sureties. Printed Forms of Application, and all necessary information, may be obtained by applying personally, between the hours of Ten and Three o'clock in the day, at the office of the Clerk and Solicitor to the Trustees, No. 14, Great Queen-street, St. James's Park.

By order, EDWARD S. STEPHENSON,
Clerk and Solicitor to the Trustees.

NOTE.—The Trustees meet on the second Wednesday in every month, to consider such applications for loans as have been sent in one clear week at the least before the first day of the month.—The sureties must be unexceptionable.

MERCHANT'S and TRADESMAN'S MUTUAL LIFE ASSURANCE OFFICE, 3, Chatham-place, Blackfriars, London.

JOHN MACGREGOR, Esq. M.P. Chairman.

The Advantages offered by this Society are—
POLICIES INDISPUTABLE, unless obtained by fraud.
All the MEDICAL FEES PAID by the Society.
Policies payable during the lifetime of the Assured.
Non-forfeiture of Policies. Assurers who find it inconvenient to pay their premiums as they fall due, may have a credit of the amount on application to the Board.
LOANS granted on Personal and other Securities in connection with Life Assurance.
Prospectuses and every information may be obtained at the Office. GEORGE THOMSON, Manager.
THOS. MUSGRAVE, Secretary.

CLERICAL, MEDICAL, and GENERAL LIFE ASSURANCE SOCIETY.

Persons of all ages, and in every station, may assure with this Society, and the assured can reside in any part of Europe, the Holy Land, Egypt, Madeira, the Cape, Australia, New Zealand, and in most parts of North and South America, without extra charge.

FIFTH DIVISION OF PROFITS.

The FIFTH BONUS was declared in January last, and the amount varied with the different ages, from 8*l.* to 35 per cent. on the premiums paid, during the last five years; or from 1*l.* to 2*l.* 10*s.* per cent. per annum on the sums assured.

The small share of profit divisible in future among the shareholders being now provided for, without intrenching on the amount made by the regular business, the Assured will hereafter derive all the benefits obtainable from a Mutual Office, with, at the same time, complete freedom from liability, secured by means of an ample Proprietary Capital—thus combining, in the same office, all the advantages of both systems.

A copy of the last report, setting forth full particulars, with a prospectus, can now be obtained of any of the Society's agents, or by addressing a line to

GEO. H. PINCKARD, Resident Secretary,
99, Great Russell-street, Bloomsbury, London.

PHŒNIX FIRE ASSURANCE COMPANY,
Lombard-street, and Charing-cross, London,
Established in 1782.

TRUSTEES AND DIRECTORS.
SIR ROBERT HARRY INGLIS, Bart. M.P.

Decimus Burton, esq.	James Horne, esq.
Octavius Edward Coope, esq.	John Dorrien Magens, esq.
William Cotton, esq.	J. Masterman, esq. M.P.
William Davis, esq.	John Petty Muspratt, esq.
George Arthur Fuller, esq.	Richard Price, esq.
Emanuel Goodhart, esq.	George Stanley Repton, esq.
James A. Gordon, esq.	Benjamin Shaw, esq.
Henry Grace, esq.	Charles Hampden Turner, esq.
Joseph Owen Harris, esq.	Matthew Whiting, esq.
Kirkman Daniel Hodgson, esq.	Thomas Wilson, esq.
Thomas Hodgson, esq.	

ASSISTANT DIRECTOR—Thomas Richter, esq.
AUDITORS.
John Davis, esq. John Hodgson, esq.
William Hammond, esq.
SECRETARIES.
Wilmer Harris, esq. George William Lovell, esq.
ARCHITECT AND SURVEYOR.—John Shaw, Esq.
SOLICITORS.—Messrs. Dawes and Sons, Angel-court.

Insurances against Loss by Fire are effected by the PHŒNIX COMPANY upon every description of Property, in every part of the World, on the most favourable Terms.

Persons insuring with the PHŒNIX COMPANY are not liable to make good the losses of others, as is the case in some offices.

Insurances with this Company expiring at Midsummer must be renewed within Fifteen days thereafter, or they will become void.

Receipts are now ready at the principal Offices, Lombard-street and Charing-cross, and with the respective Agents throughout the United Kingdom.

GUARDIAN FIRE and LIFE ASSURANCE COMPANY, No. 11, Lombard-street, London.

DIRECTORS.
Thomson Hankey, jun. esq. Chairman.
Sir Walter R. Farquhar, bart. Deputy Chairman.

Henry Hulse Berens, esq.	Stewart Marjoribanks, esq.
John Dixon, esq.	John Martin, esq. M.P.
Francis Hart Dyke, esq.	Rowland Mitchell, esq.
John Harvey, esq.	James Morris, esq.
John G. Hubbard, esq.	Henry Norman, esq.
George Johnstone, esq.	Henry R. Reynolds, jun. esq.
John Labouchere, esq.	John Thornton, esq.
John Loch, esq.	James Tulloch, esq.
George Lyall, esq.	Henry Vigne, esq.

AUDITORS.

A. W. Robarts, esq.	Henry Sykes Thornton, esq.
Lewis Loyd, jun. esq.	John Henry Smith, esq.

George Keys, esq. Secretary.
Griffith Davies, esq. F.R.S. Actuary.

LIFE DEPARTMENT.—Under the provisions of an Act of Parliament, this Company now offers to future Insurers Four-fifths of the Profits, with Quinquennial Division, or a Low Rate of Premium without participation of Profits.

The next division of Profits will be declared in June 1855, when all Participating Policies which shall have subsisted at least one year at Christmas 1854 will be allowed to share in the Profits.

At the several past Divisions of Profits made by this Company, the Reversionary Bonuses added to the Policies from One-Half the Profits amounted, on an average of the different ages, to about One per Cent. per Annum on the sums insured, and the total Bonuses added at the four Septennial Divisions exceeded 770,000*l.*

FOREIGN RISKS.—The Extra Premiums required for the East and West Indies, the British Colonies, and the northern parts of the United States of America, have been materially reduced.

INVALID LIVES.—Persons who are not in such sound health as would enable them to insure their Lives at the Tabular Premiums, may have their Lives insured at Extra Premiums.

LOANS granted on Life Policies to the extent of their values, provided such Policies shall have been effected a sufficient time to have attained in each case a value not under 50*l.*

ASSIGNMENTS of POLICIES.—Written Notices of, received and registered.

Notice is hereby given, that Fire Policies which expire at Midsummer must be renewed within fifteen days at this Office, or with Mr. SAMS, No. 1, St. James-street, corner of Pall-mall; or with the Company's Agents throughout the Kingdom, otherwise they become void.

PARTICIPATION IN PROFITS.

GLOBE INSURANCE, Cornhill and Pall-mall, London.

ESTABLISHED 1803.
(Empowered by Special Acts of Parliament.)
For FIRE, LIFE, ANNUITIES, and the PURCHASE of REVERSIONS and LIFE CONTINGENCIES.
James Wm. Freshfield, esq. M.P. F.R.S. *Chairman.*
Fowler Newsam, esq. *Deputy Chairman.*
George Carr Glyn, esq. M.P. *Treasurer.*

Henry Alexander, esq.	Boyd Miller, esq.
John S. Brownrigg, esq.	Sheffield Neave, esq.
Boyce Combe, esq.	William Phillimore, esq.
Thomas M. Coombs, esq.	W. H. C. Plowden, esq. M.P.
William Dent, esq.	Robert Saunders, esq.
Edward Goldsmid, esq.	Sir Walter Stirling, bart.
Sir I. L. Goldsmid, bart. F.R.S.	Wm. Thompson, esq. ald. M.P.
Robert Hawthorn, esq.	William Tite, esq. F.R.S.
John Hodgson, esq.	Henry J. Wheeler, esq.
Richard Lambert Jones, esq.	Josiah Wilson, esq.
Robert Locke, esq.	Benjamin G. Windus, esq.

CAPITAL:—ONE MILLION Sterling, the Whole Paid up and Invested.

NEW TABLES of Life Premiums, on a just and liberal basis, have been adopted by the "GLOBE INSURANCE," combining the Plan of Participation with those principles of Solidity and Security which have distinguished the Company from its formation.

TWO SCALES of Premiums, Participating and Non-Participating.

TWO-THIRDS of Profits divided as BONUS every Seven Years.

ONE-THIRD of the Premium may remain unpaid as a debt upon the Policy—and other facilities afforded to Insurers.

Insurances taken to the extent of 10,000*l.* on a Single Life.

Every class of FIRE and LIFE Insurance business transacted.

PROSPECTUSES with full Tables, and Details—and Forms; may be had at the Offices of the Company; or of any of the Agents. By order of the Board,

WILLIAM NEWMARCH, Secretary.

Fire Policies due at Midsummer must be paid on or before the 9th July.

THE YORKSHIRE FIRE and LIFE INSURANCE COMPANY. Established at York, 1824, and empowered by Act of Parliament. Capital, 300,000*l.*

TRUSTEES.
Lord Wenlock, Escrick Park.
G. L. Thompson, esq. Sheriff Hutton Park.
Robert Swann, esq. York.
BANKERS.—Messrs. Swann, Clough, and Co. York.
ACTUARY and SECRETARY.—Mr. W. L. Newman, York.

The attention of the public is particularly called to the terms of this Company for LIFE INSURANCES, and to the distinction which is made between male and female lives.

Extract from the Table of Premiums for Insuring 100*l.*

Age next birthday.	A MALE.	A FEMALE.	Age next birthday.	A MALE.	A FEMALE.
	Whole Life Premiums			Whole Life Premiums.	
	£ s. d.	£ s. d.		£ s. d.	£ s. d.
10	1 7 6	1 5 4	46	3 11 6	3 3 2
13	1 9 3	1 7 0	50	4 1 9	3 13 3
16	1 11 3	1 8 10	53	4 11 6	4 2 6
20	1 14 4	1 11 6	56	5 4 0	4 14 0
23	1 17 0	1 13 8	60	6 6 0	5 12 6
26	2 0 3	1 16 2	63	7 4 0	6 7 6
*30	2 5 0	1 19 9	66	8 4 0	7 10 8
33	2 8 6	2 2 10	70	10 0 4	9 7 6
36	2 13 0	2 6 4	73	11 16 2	11 2 6
40	2 19 9	2 13 0	76		13 1 9
43	3 5 3	2 17 2	80		15 12 10

* EXAMPLE.—A gentleman whose age does not exceed 30, may insure 1,000*l.* payable on his decease, for an annual payment of 22*l.* 10*s.*; and a lady of the same age can secure the same sum for an annual payment of 19*l.* 17*s.* 6*d.*

Prospectuses, with the rates of premium for the intermediate ages, and every information, may be had at the Head Office in York, or of any of the Agents.

FIRE INSURANCES

are also effected by this Company, on the most moderate terms.

Agents are wanted in those towns where no appointments have been made. Applications to be made to Mr. W. L. NEWMAN, Actuary and Secretary, York; or to

Mr. RICH. WOOD, Solicitor, 12, John-street, Bedford-row, Agent for London.

LAWRENCE and SON, Carpenters and Sash Makers, REMOVED to No. 1, Brook-street, New-road, near Tottenham Court-road.

CHARLES WM. WATERLOW,
Manufacturer of Sashes and Frames, and Joiner to the Trade,

121, Bunhill-row, Finsbury-square.

Well-seasoned materials, superior workmanship, lowest prices.

Upwards of FOUR HUNDRED DOORS, and a large variety of Sashes and Frames, always on sale.

Glazed goods securely packed for the country. Steam-struck mouldings in any quantity.

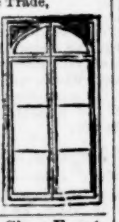
N.B. This Establishment is worth the notice of all engaged in building.

NOTICE of REMOVAL.—JOHNSON & PASK,
Sash, Shop Front, and Door Makers to the Trade,

beg to inform their Customers and the Public generally, that they have removed to more extensive premises in

BAKER-STREET,
BAGNIGGE WELLS-ROAD,

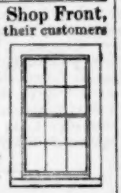
where they have convenience for carrying on a larger business.



N.B. By inclosing a postage-stamp, a full list of prices may be had by return of post.

COLLAN KELLY and SON, Sash, Shop Front, and Door Makers to the Trade, beg to inform their customers and the public generally that they are now prepared to supply their goods lower than any other house in the Trade.

2, ARTHUR-STREET, near OXFORD-STREET, and COAL-YARD, DRURY-LANE, BLOOMSBURY.



C. K. and Son have a quantity of 4-framed square doors on stock at 7*s.* each.

N.B. By inclosing a postage stamp, a full list of prices may be had by post.

TARPAULINS FOR COVERING ROOFS during Repairs, SCAFFOLD CORD and every description of ROPE used by Builders upon the lowest terms. Marquees and temporary Awnings on sale or hire. Orders per post receive the most prompt attention.—WILLIAM PIGGOTT, 115, Fore-street, City, Manufacturer, by appointment, to her Majesty's Honourable Board of Ordnance.

IMPORTANT to FAMILIES FURNISHING, who study Elegance with Economy.—JAMES COOK'S three guinea French-polished Mahogany Arabian Bedstead, Bedding, Cabinet, Carpet, Looking-glass, and Upholstery Warehouse. Estimates given, and a list of prices sent post-free.

BROMPTON HOUSE, 22 and 23, QUEEN'S-BUILDINGS, KNIGHTSBRIDGE.

LIGHTERAGE.—To Saw-Mill Proprietors, Timber, Slate, and Stone Merchants, or others, requiring Lighterage.—The Advertiser having a large number of Barges, is willing to undertake LIGHTERAGE at prices that defy competition.—CHARLES STRUTTON, 34, Commercial-road, Lambeth.

BUILDING MATERIALS of every description WHARFED, &c.—Timber loaded at 1*s.* per load; carted at 1*s.* per load per mile; other goods in proportion.

BEST COALS, 21*s.* per ton; Seconds, 20*s.* thoroughly screened.—THOMAS LAMBERT, St. George's-wharf, Upper Belgrave-place, Pimlico.

PALMER'S PATENTED PROCESS for reducing or enlarging Paintings, Prints, Sculpture, Daguerreotypes on Glass, Microscopic Objects, copying Landscapes, Buildings, Portraiture, &c. &c. and printing the same with the greatest accuracy and facility, either by the artist or amateur.—W. ELLIOTT and SONS, 56, Strand, London, Sole Agents for the apparatus, which may be seen daily from twelve to two.

PATENT VULCANISED INDIA-RUBBER TUBING, for Gas Fittings, Chemical Purposes, Fire Engines, Manure Pumps, &c.—JAMES LYNE HANCOCK, Sole Manufacturer (and Licensee), Goswell-mews, Goswell-road, London, begs to invite the attention of Architects, Builders, Engineers, and the trade generally, to the Vulcanised India Rubber Tubing, which is now manufactured from 1-8 inch bore and upwards, in lengths from 50 to 100 feet, and of various strengths, suitable to the purposes for which it is applied. VULCANIZED HOSE for FIRE ENGINES, LIQUID MANURE, and for conveying HOT WATER to BATHS in DWELLING-HOUSES and BREWERIES, manufactured to resist great pressure of any length and size to order.

*** Testimonials may be had on application at the Manufactory.

N.B. VULCANIZED WASHERS and SHEET RUBBER or Steam and Hot Water Pipes, and Packings for Pistons and Gland-Boxes of Steam Engines, cut any size to order.

GUTTA PERCHA TUBING.—Many inquiries having been made as to the durability of this tubing, the Gutta Percha Company have pleasure in drawing attention to the following letter, received from Mr. C. Hacker, Surveyor to the Duke of Bedford:—

"Office of Works, Woburn Park, Jan. 10, 1852.

"In answer to your inquiries respecting the Gutta Percha Tubing for Pump Suctions, I find that the water has not affected it in the least, although it will eat lead through in two years; we have adopted it largely, both on account of being cheaper than lead, much easier fixed, and a more perfect job.

"Yours, &c. C. HACKER"

N.B. The Company's Illustrated Circulars, containing instructions to plumbers for joining tubes, lining tanks, &c. will be forwarded on the receipt of three postage stamps.

THE GUTTA PERCHA COMPANY, PATENTEES, 18, WHARF-ROAD, CITY-ROAD, LONDON.
Wholesale City Depôt, Messrs. BURGESS and KEY, 103, Newgate-street.

MINTON and CO.'S ENCAUSTIC and other PATENT TILES for Churches, Entrance Halls, Conservatories, Balconies, &c.; Antique, Geometrical, and Alhambric Mosaics, manufactures of a highly decorative character and extreme durability, Slabs and Tiles for Fireplaces and Hearths, Covings for Grates, Door Furniture, White Glazed and Ornamental Tiles for Baths, Dairies, and Kitchen Ranges, may be had in great variety at their Warehouse, 9, Albion-place, Blackfriars-bridge, London, and at their Manufactory, Stoke-upon-Trent, Staffordshire.

ORNAMENTAL TILING for ROOFS.—The Society of Arts awarded Mr. ROBERT BROWN a Medal for his improved Italian Tiles, and in the Great Exhibition of 1851 they were awarded a Prize Medal, and were the only Italian tiles specifically named by the jury. These tiles have been used by Sir CHARLES BARRY, and other architects, and have met their marked approval; they have also received the approval of eminent men in most parts of Europe. The slight curve enables the lower tiles to be fitted closely together without mortar or cement. The horizontal indentation forms a perfect security against the driving rains: when on a building, they have the exact appearance of the most admired form of Italian tiling. The grey or green colour is burnt in, and is permanent. They are supplied at a stated price per square.

ORNAMENTAL PLAIN TILES, in great variety, made from the Surbiton clay, and also from the Staffordshire terro-metallic clays, at per square.

PLAIN GOTHIC RIDGE TILES, HOP and VALLEY TILES, and COPING BRICKS.

The GROOVED RIDGE TILE, for the reception of any varied outline of vertical ornament, was invented by Mr. Robert Brown, and for which invention he also received from the Society of Arts a medal. He now makes these tiles, of any desired colour, from the Surbiton clay, as also from the Staffordshire terro-metallic clay. He has lately devoted great attention to the varied conditions of form, so as to adapt them to the different periods of Gothic Architecture. The attention of architects is particularly invited to those ridge tiles of a green colour. They are supplied at a stated price per foot run. Mr. Robert Brown trusts that architects who consider the Grooved Ridge Tile worthy of introduction, will think it but fair and honourable that the inventor should supply them, provided he does so as cheaply and well as any other party. But should even this hope not be realised, he will still have the satisfaction of having been the inventor of an article which has become of universal adoption.

TILE WORKS, SURBITON-HILL, SURREY.

PAN TILES, 48*s.* per 1000; PLAIN ditto, 32*s.* 6*d.* per 1000; FIRE BRICKS, 65*s.* per 1000.—WARD and CO. Honduras Wharf, Bankside, are now offering their Fire Goods (being about to make a considerable alteration in their Premises) at very reduced prices. Dutch Clinkers, Windsor Loam, Tiles, and Bricks; Fire-clay, superior, 12 inches and 9 inches; Paving Tiles, of a rich colour, at a very low price. Gas Bricks and shaped Tiles.

HOOPER'S WHITE BRICKS, moulded for Plinths, Jambs, Chimney-shafts, Wall-copings (at from 4*d.* to 8*d.* per foot run); Paving Tiles of different patterns, in white, red, and blue; Fancy Roofing and Ridge Tiles, coloured brown, or for slate; White Rebate Tiles, for facing buildings, &c. sent to all parts of the country direct from the kilns.—Office, 2, Portland-street, Southampton, where samples and illustrated price-lists may be had on application, post-paid.

WHITE SUFFOLK and RED FACING BRICKS of superior quality. Moulded Bricks to any pattern.

COWLEY, KENT, and ESSEX BRICKS; also Yellow and Pale Malm Seconds, Cutters, Paviors, Shippers, &c. &c.

KENTISH RAG STONE of the finest quality, and of the blue tinge so much approved by architects, can now be supplied, at a FURTHER and CONSIDERABLE REDUCTION in PRICE.

Apply to Mr. BENJAMIN GOUGH, 37, Newington-crescent, Newington Butts.

BRICKS of the FIRST QUALITY, at the lowest possible prices for Cash, to be had at E. ASHENDEN'S, Vauxhall Wharf, Shipping and Draw-Dock, Millbank, Westminster.

E. ASHENDEN has to acquaint the Public, that having taken the above Premises, he will have constantly for sale a large quantity of Bricks, &c.

Orders addressed as above, or to his Brickfields, Sittingbourne, Kent, will meet with prompt attention.

Red-facing Bricks, Black Headers, and Moulded Bricks to any pattern.

MOON'S PATENT HOLLOW CHIMNEY BRICKS, for Circular Flues, 10 inches diameter; strong and fire-proof for Chimney Building.—Particulars to be had of Mr. HENRY CLAYTON, the Prize Brick and Tile Machine Maker, Atlas Works, Upper Park-place, Dorset-square, London.

The Bricks to be had at the following places, viz.:—	Makers.
Stevenage, Herts	Warren and Matthews.
King's-cross, London	
Epping, Essex	Miss Hinde.
Leyland, Lancashire	Henry Holland.
Swansea, South Wales	
Ryde, Isle of Wight	J. J. Whittingham and Co.
Birkenhead, Cheshire	